

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 1 of 3
Reviewed & approved by: /		2006 09 09

A- REQUEST

ECR :

ECO : 7

Nature of proposed change :	MODIFYING PAD OF BP350 TO BETTER FIT THE DART SKID TUBE WITH WEARSHOE BOLTS ON. THIS WOULD ELIMINATE THE BOLT WEARING OF PADS
Reason :	BOLTS WEAR THE PADS
Submitted By :	SIMON EBACHER (CAN HELI) = NATHALIE BARBES
Date :	JAN 14, 2016

B- IMPACT ANALYSIS

Product Manager	Signature : <u>D. Barbeau</u> /date : 2016 04 26
Operation Manager	Signature : <u>N. Barbeau</u> /date : 2016 04 26
Quality System Manager	Signature : <u>D. Barbeau</u> /date : 2016 04 26
Regulatory affairs Manager	Signature : <u>D. Barbeau</u> /date : 2016 04 26
Supplier A AVIATECH	• RENAUD - BERTHELOT - RICHER (CONSULTED PRIOR TO TRIGGERING MANDATE FOR CHANGE) Signature : _____ /date : 2016 04 26
Supplier B CNC SPEC	• CHRISTIAN BEAULIEU (CONSULTED VS MACHINING STDS) Signature : _____ /date : 2016 04 26
Other	Signature : _____ /date : _____

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 2 of 3
Reviewed & approved by: /		2006 09 09

C- DECISION

Risk analysis	<p>IT HAS BEEN CONFIRMED THAT THE PROPOSED CHANGE WILL NOT AFFECT THE PRODUCT'S DURABILITY & SAFETY - By RENAUD BERTHELOT-RICHER / ENG. AVIATECH</p> <p>Signature: <u>R. Berthelot-Richer</u> / date: <u>2016 04 26</u></p>
---------------	---

Decision	<p>GO AHEAD WITH CHANGE.</p> <p>* WE SUBMITTED SUGGESTED CHANGE TO CAN. HELI. & THEY HAVE REVIEWED & CONFIRMED IT MEETS THEIR NEEDS.</p> <p>Signature: <u>R. Berthelot-Richer</u> / date: <u>2016 04 26</u></p>
----------	---

D- ACTION PLAN

Action	Resp	Due date :	Verified by :
• AVIATECH TO COMM WITH CAN HELI FOR BEST INFO OF NEEDS	DR	2016 06 30	NR
* SIMON EBACHER & RENAUD BERTHELOT-RICHER CAN HELI AVIATECH		HAVE COMM.	
<u>LIST OF DOCS CHANGED:</u>			
• PAD DWG 314-0018-01-S rev D → rev. E		2016 06 30	NB
• ASSY DWG 112-0002-00-S rev D → rev. E			NB
• INSTALL. INST HTC-314-0020-00E rev. F → rev. G			NB
• MDL BP-AS350 & 355-1000 rev. G → rev. H		↓	NB
			Reviewed 2016 09 22
• UPDATE ALL IN MY COMPUTER & SERVER:			NR 2016 09 22

Effective date : <u>2016 09 22</u>	Effective lot no : <u>NEXT LOT XXXXXX</u>
------------------------------------	--

HTC-LNF-160435-01
 (NOT AWAITING NEW PADS TO BE ASS'D IN KITS BEFORE END OF 2016)

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 3 of 3
Reviewed & approved by: /		2006 09 09

E- VERIFICATION

Verified Elements :	By/ date :
• Verified Drawings & Does + Nature of Changes	
• All done per request to add resources	
• All elements verified by Sriatech	WB
before official approval.	2016 09 22

F- VALIDATION

Validated Elements :	By/ date :
All changes were entirely validated	
by our specialists at Sriatech, & reviewed	
by DAR H. K. Zola before being approved.	
	2016 09 22

G- CLOSURE

I confirm that the designated change has been performed successfully :

Signature : D. Bailean /date : 2016 09 22

BP350

NEW:

△ ~~Rev~~ ^{Assy}

112-0002-00-S Rev E

△ ~~pod~~ ^{pod}

314-0018-01-S Rev E

} Dwg

△ HDL BP-AS350+355-1000-Rev H

△ INSTR
INSTALL

HTE-314-0020-00E Rev G

△ HTS - EO-0709-002 Rev - A

Per
Change

-
- Drafts & Work
 - Final New Versions

Preparation

Read full directions on Two Delicious:

http://www.yummly.com/recipe/external/Healthy-Grab-_n-Go-Breakfast-Muffins-990773

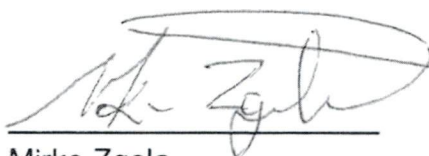
Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev H)

APPROVED BY:

DATE: MAY 30, 2016

Mirko Zgela

Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
G	December 21, 2012	Updated Tolerance data regarding Pad and Updated referenced document identification and revisions	M.Z.
H	May 30, 2016	Added recesses for skid wear shoes and leaf spring on streamline BearPaw (Dwg # 314-0018-01-S) and allowed trimming/machining of recesses on previous models provided the relief leaves at least 0.500" thickness.	M.Z.

Page 1/3

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355/EC130-1000	Compliance Plan – Eurocopter Model AS350/355/EC130 Series Helicopters – Installation of BearPaw Model BP350 and BP130	B	DAR 310	May 11, 2011
HTC-314-0020-00-E	BearPaw Model BP350 – Installation Instruction – AS350/355 Series Helicopters	G	DAR 310	May 30, 2016
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008
HTC-TM-0709-001	Structural Substantiation – BearPaw Streamline BP350 with Recesses Wear Pads	NC	DAR 310	May 30, 2016

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	E	DAR 310	May 30, 2016
314-0002-15 (VNR084)	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
314-0004-15 (VNR085)	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
314-0005-15 (VNR086)	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
314-0007-15 (VNR089)	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
314-0012-01 (VNR099)	Filler Block 1/4"	A (R01)	DAR 310	Aug 8, 2006
314-0018-01 (VNR106)	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
314-0018-01-S (VNR106-S)	BearPaw BP350 – Pad Streamline	E	DAR 310	May 30, 2016
314-0019-15 (VNR107)	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05	Heat Shrink Specifications	A	N/A	Sept 6, 2006

TABLE OF CONTENTS:

INTRODUCTION	p.2
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.3
INSTALLATION	p.4
BearPaw Installation	p.4
BearPaw Removal	p.6
Weight & Balance	p.6
Parts List	p.7
INSPECTION	p.8
Life Limited Items	p.8
Pre-Flight	p.8
Periodic Inspection Schedule	p.8
500 Hour or Yearly Inspection Details	p.8
Overhaul Requirements	p.10
Pad Recesses for Skid Wear Shoes and Leaf Spring	p.10
REVISIONS & APPROVAL	p.11
Annex A (BearPaw Assembly Drawing)	
Annex B (Tolerance Zones for Cracks and Wear)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

[1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

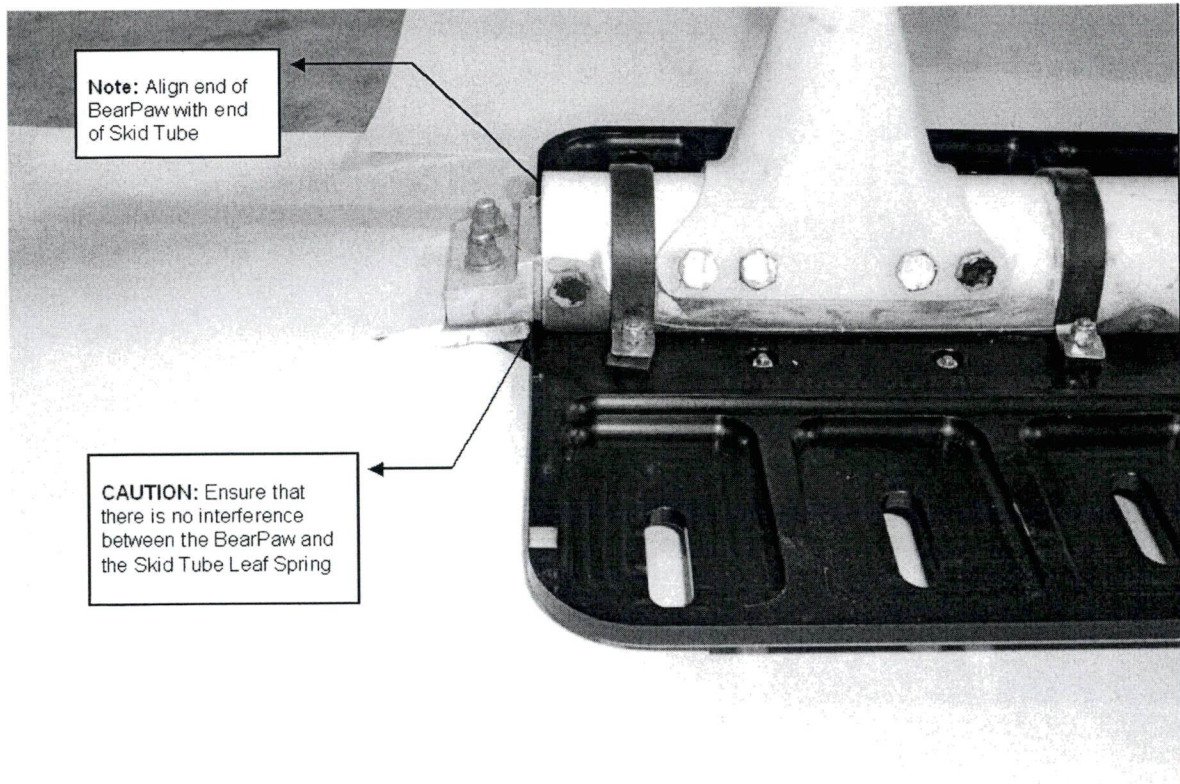


Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid

BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01) or (P/N 314-0018-01-S Streamline);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data ⁽¹⁾

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kG
Helitowcart BearPaw Model BP350 - <u>Streamline</u> (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kG

Notes:

(1) Weight and moment provided are for full kit installation (two BearPaw assemblies).

Parts Lists

The Helitowcart BearPaw detailed parts list is as follows.

Table 4 – Part List (one BearPaw)

Description	Qty	Part / Dwg No.	Additional Drawing Reference No./ Name
BearPaw Assembly Model BP350	1	112-0002-00 or 112-0002-00-S	BearPaw Assembly – Pocket Style, or Bear Paw Assembly – Streamline
BearPaw Pad ⁽¹⁾ Model BP350	1	314-0018-01 or 314-0018-01-S	BearPaw BP350 – Pocket Style Pad (VNR106) or BearPaw BP350 – Streamline Pad (VNR106-S)
U Shaped Clips	3	314-0019-15	BearPaw BP350 - U Shaped Clips (VNR107)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks 1/4"	6	314-0012-01	BearPaw – Filler block ¼" (VNR099)
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	IceBlade Assembly (VNR086)
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use pocked shaped BearPaw Pad P/N 314-0018-01 for assembly P/N 112-0002-00. Use streamlined Pad P/N 314-0018-01-S for assembly P/N 112-0002-00-S as applicable.

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to Tables 5 & 6 and Annex B – Tolerances for cracks & wear

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 600 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 600 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

600 Hours or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See Tables 5 & 6 and Annex B – Tolerances for cracks & wear.
- Replace all parts damaged beyond tolerances.

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	0,050	<u>Stiffeners:</u> NO cracks in stiffeners.

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000; and 0,88	0,250	
C	0,273 to 0,348 (variable thickness)	0,075	Cracks are acceptable in zone C under the Helitowcart BearPaw to a maximum length of 0,5". Stop drill cracks with a 0,125" hole.
D	0,49 (thickness after radius)	0,075	No cracks in the radius
E	0,38	0,075	No cracks in the BearPaw contour

Pad Recesses for Skid Wear Shoes and Leaf Spring

BearPaw 314-0018-01-S may be trimmed/machined to clear wear shoe mounting screws and skid leaf spring provided the recesses leave at least 0.500" thickness and provided that maximum lengths and widths of Figure 2 are not exceeded.

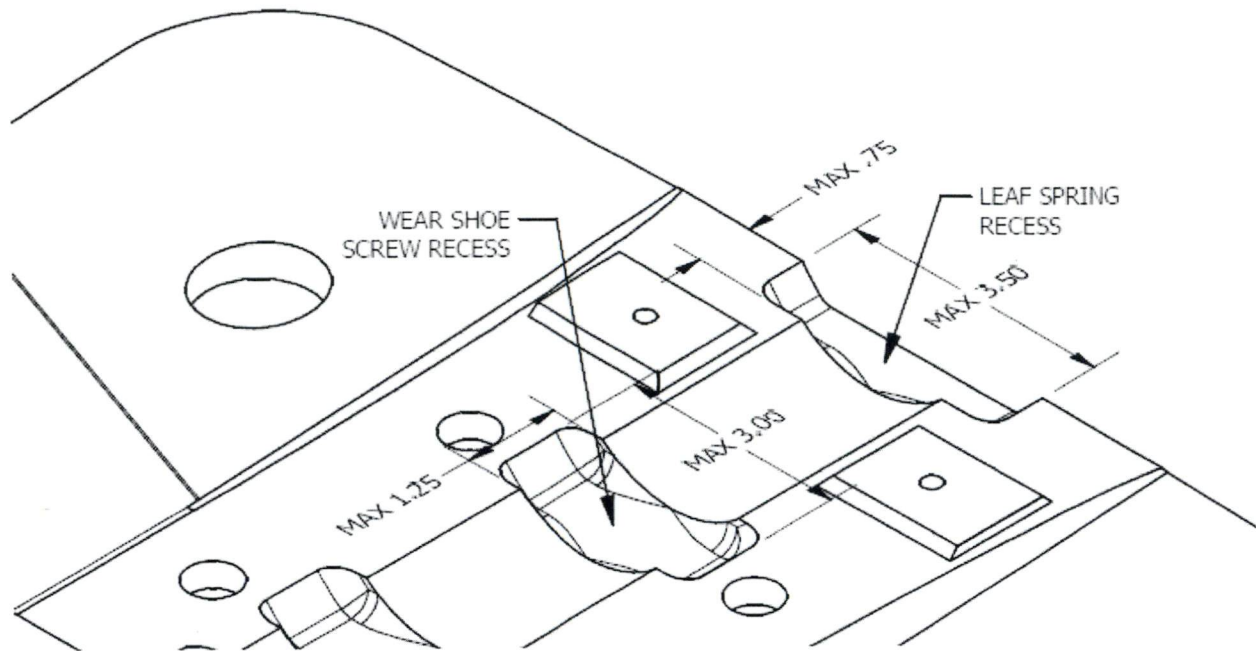


Figure 2 – Maximum Dimensions of Recesses

Overhaul Requirements

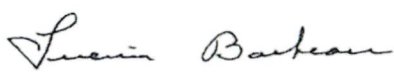
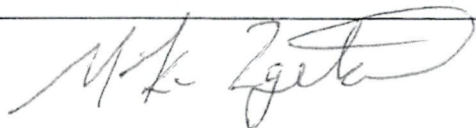
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to C of G data
December 21, 2012	F	Updated Pad Tolerances and Document identifications . Improved page set up for reader convenience.
April 29, 2016	G	Added recesses for skid wear shoes and leaf spring on streamline BearPaw and allowed trimming/machining of recesses on previous models provided the relief leaves at least 0.500" thickness.

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Date: May 30, 2016
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	Date: May 30, 2016

Annex A – BearPaw Assembly Drawing

See: BearPaw Assembly, dwg no. (112-0002-00) for Pocket style pad or;
 BearPaw Assembly, dwg no. (112-0002-00-S) for Streamline pad

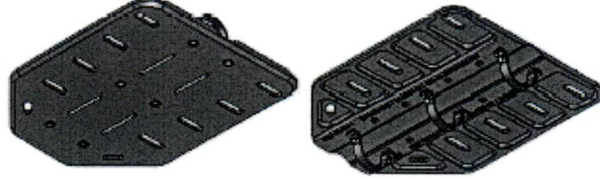
Annex B – Tolerance Zones for Cracks and Wear

See: BearPaw Pad, dwg no. 314-0018-01 (VNR106) for Pocket style pad;
 BearPaw Pad, dwg no. 314-0018-01-S (VNR106-S) Rev A to D for Streamline pad without recess;
 BearPaw Pad, dwg no. 314-0018-01-S (VNR106-S) Rev E for Streamline pad with recesses.

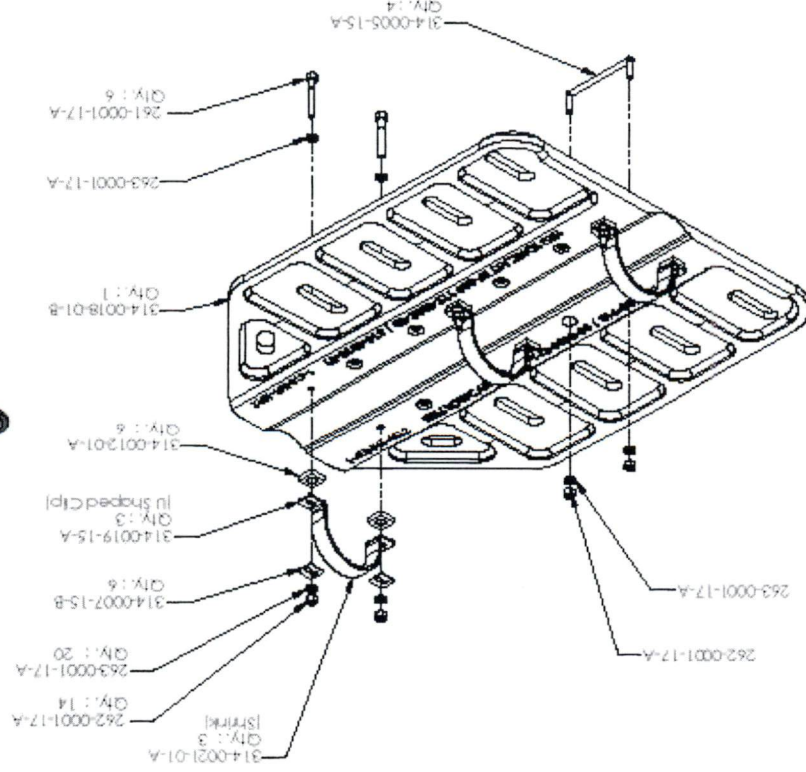
Annex A – BearPaw Assembly Drawing

Pocket Style Pad – Dwg 112-0002-00

No.	Qty.	Description	Part #	Rev #
1	1	Bearpaw BP-350 - Pad	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-15	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Sotted dip support	314-0007-15	B
5	6	Bearpaw - Filter Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-15	A
7	6	Bolt AN4-14A	261-0001-17	A
8	20	Washer AN950-416	263-0001-17	A
9	14	Nut MS20365-428	262-0001-17	A

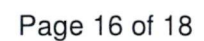


Note : Iceblade assembly can be omitted from installation (Optional)

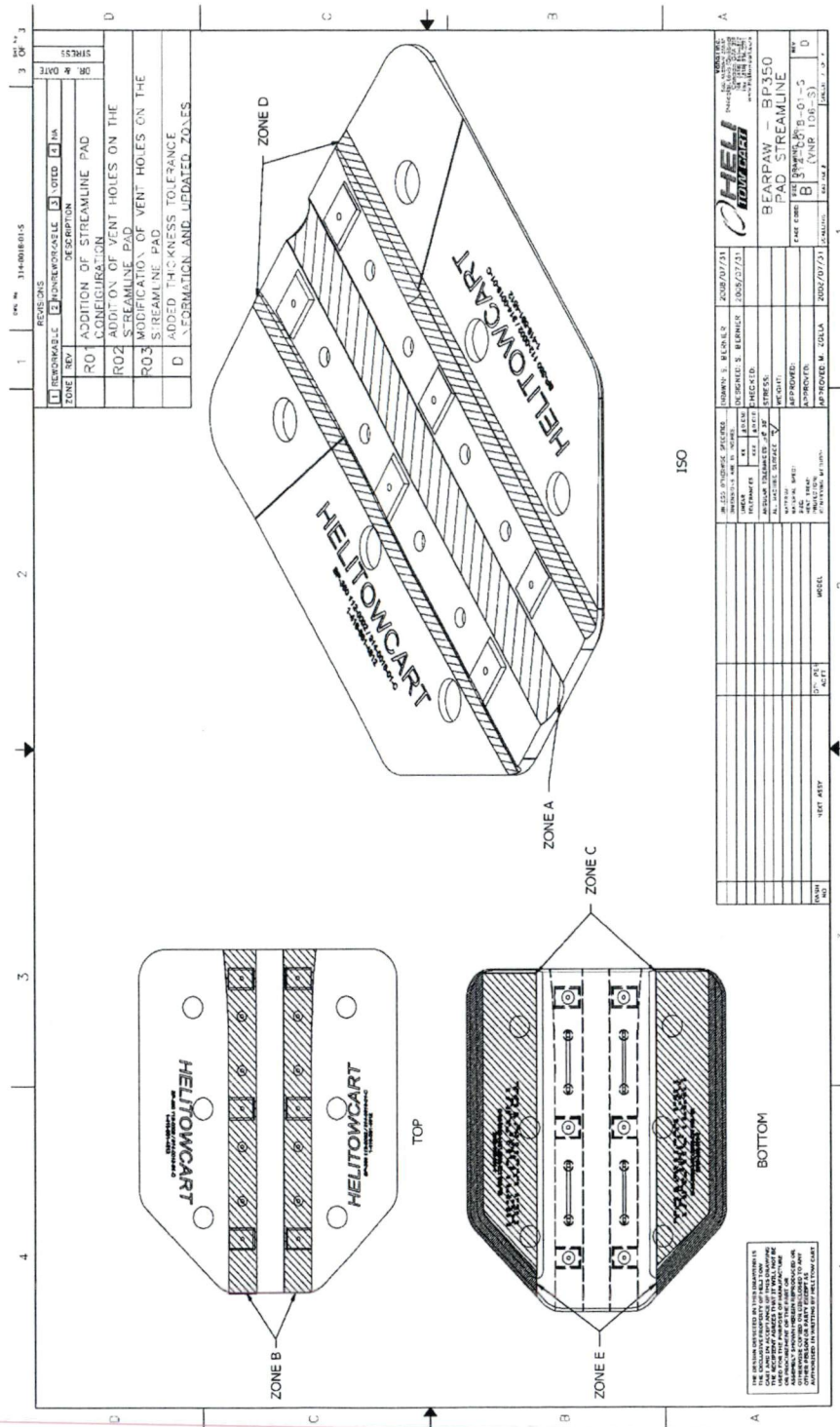


REV	DATE	DESCRIPTION
1	11/20/2004	Initial Release
2	11/20/2004	Revised for AS350/355

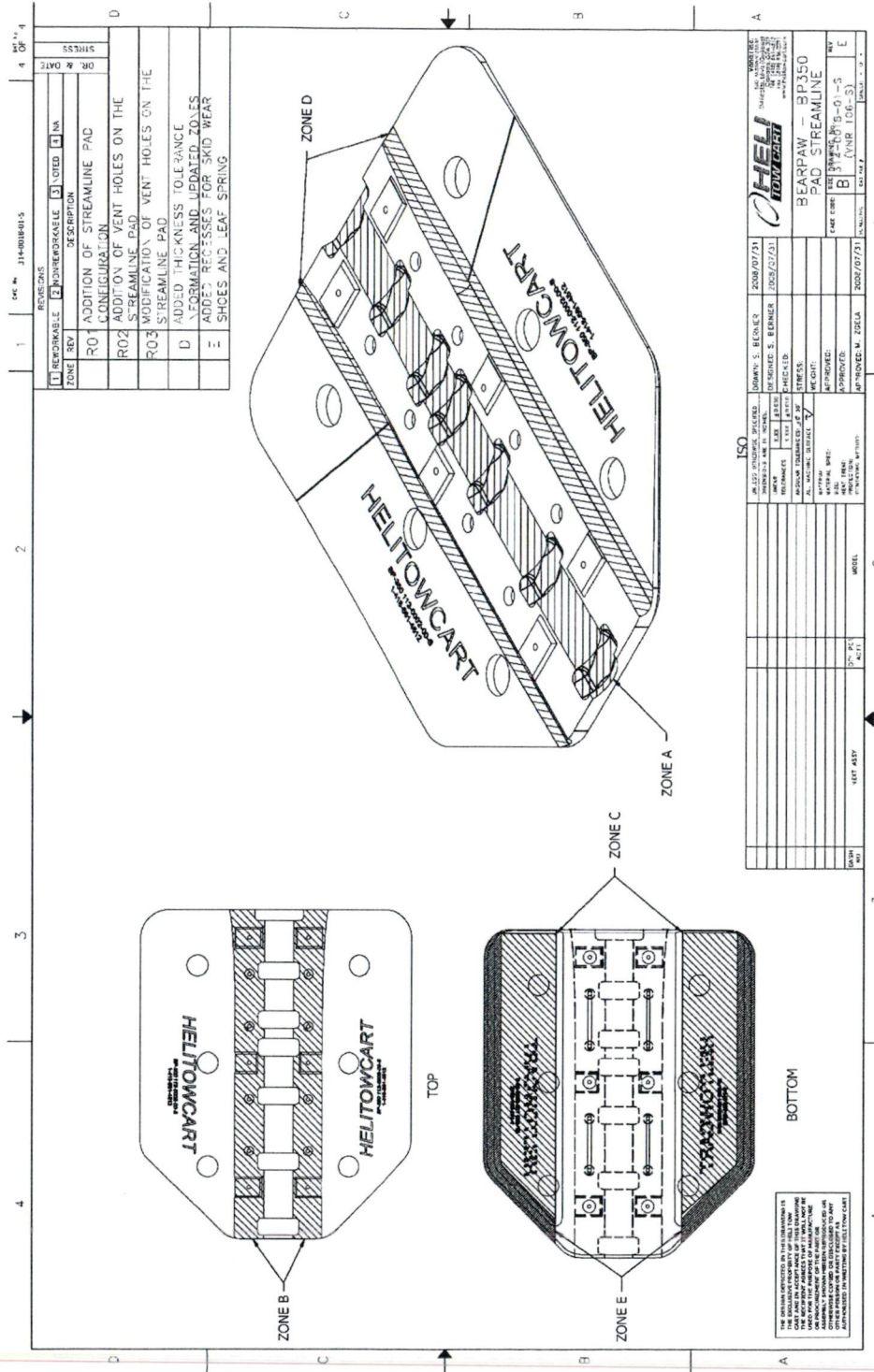
Annex B – Tolerance Zones for Cracks and Wear

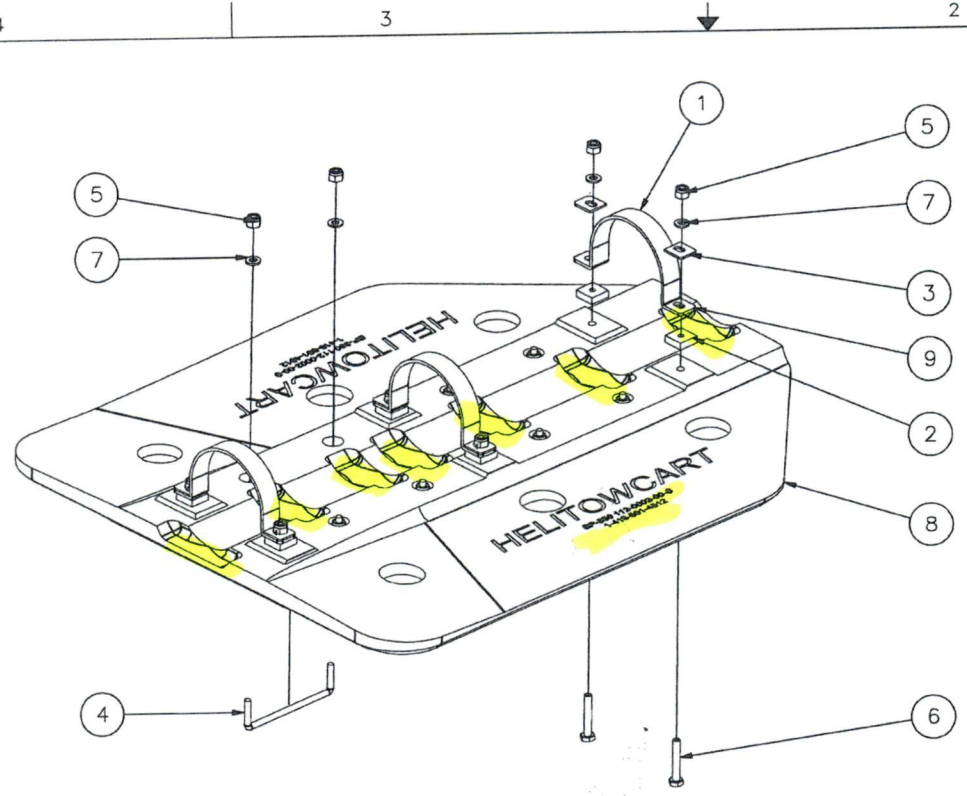


Streamline Pad w/o Recesses – Dwg 314-0018-01 (VNR106-S) Rev A to D



Streamline Pad with Recesses – Dwg 314-0018-01 (VNR106-S) Rev E





		DWG No		112-0002-00-S		Sheet No		1		OF		1				
REVISIONS												DR. & DATE	STRESS	D		
1		REWORKABLE		2		NONREWORKABLE		3		NOTED					4	
ZONE		REV		DESCRIPTION										DR. & DATE	STRESS	D
		A		ADDITION OF STREAMLINE PAD CONFIGURATION												
		B		ADDITION OF VENT HOLES ON THE STREAMLINE PAD												
		C		MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD												
		D		DELETED REVISIONS IDENTIFICATION IN PART NUMBER												
		E		ADDED RECESSES FOR SKID WEAR SHOES AND LEAF SPRING												

NOTE: ICEBLADE ASSEMBLY, ITEM4, CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

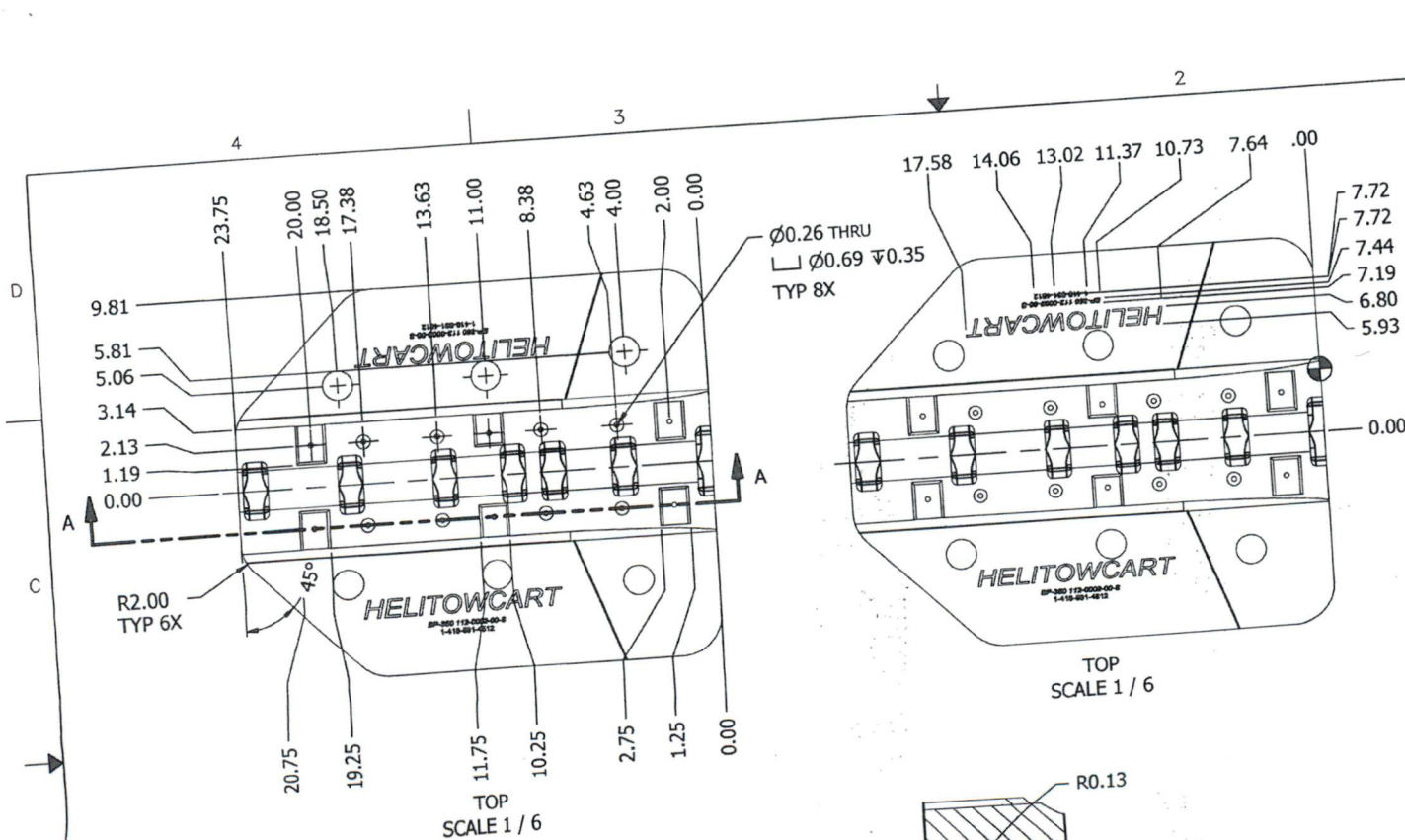
1	3	314-0019-15	U SHAPED CLIP	STEEL		
2	6	314-0012-01	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15	ICE BLADE ASSEMBLY	STEEL		1x6 1/4
5	14	262-0001-17	MD20365-42B	STEEL		1/4-28
6	6	261-0001-17	AN4-14A	STEEL		1/4-28 UNF
7	20	263-0001-17	AN960-416	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314-0021-01	SHRINK			
ITEM	QTY	PART NUMBER		DESCRIPTION	MATERIAL	SPECIFICATION

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

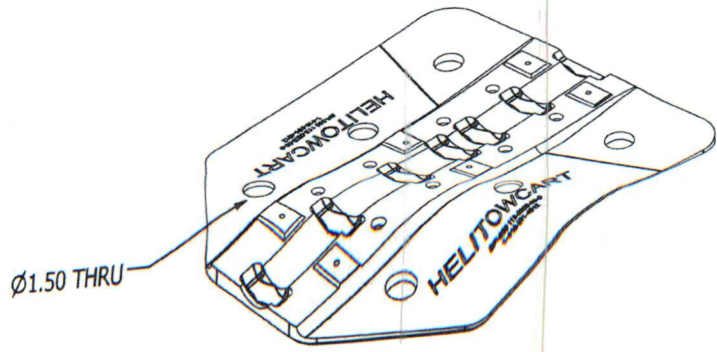
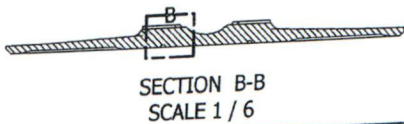
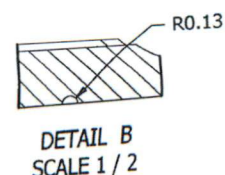
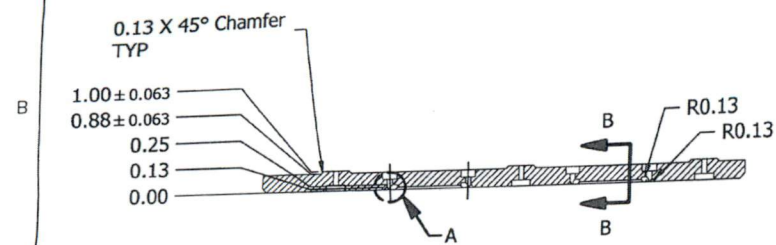
DASH NO		NEXT ASSY		QTY PER ACFT	MODEL
UNLESS OTHERWISE SPECIFIED		DRAWN: S. BERNIER		2008/07/31	
DIMENSIONS ARE IN INCHES		DESIGNED: S. BERNIER		2008/07/31	
LINEAR	XX ±0.030	CHECKED:			
TOLERANCES	XXX ±0.010	STRESS:			
ANGULAR TOLERANCES ±9° 30'		WEIGHT:			
ALL MACHINE SURFACE		APPROVED:			
MATERIAL:		APPROVED:			
MATERIAL SPEC:		APPROVED: M. ZGELA		2008/07/31	
SIZE:		SCALE: NTS		CAGE CODE: B 112-0002-00-S	
HEAT TREAT:		SIZE: DRAWING No.		REV E	
PROTECTION:		SCALE: NTS		CAGE CODE: B 112-0002-00-S	
IDENTIFYING METHOD:		SCALE: NTS		CAGE CODE: B 112-0002-00-S	



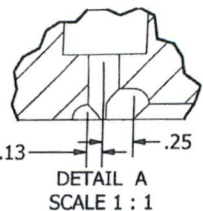
BEARPAW - BP350
ASSEMBLY STREAMLINE




1		DWG No	314-0018-01-5		SHEET No		1		OF		4				
REVISIONS															
1		REWORKABLE		2		NONREWORKABLE		3		NOTED		4		NA	
ZONE		REV		DESCRIPTION											
		R01		ADDITION OF STREAMLINE PAD CONFIGURATION											
		R02		ADDITION OF VENT HOLES ON THE STREAMLINE PAD											
		R03		MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD											
		D		ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES											
		E		ADDED RECESSES FOR SKID WEAR SHOES AND LEAF SPRING											



THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART



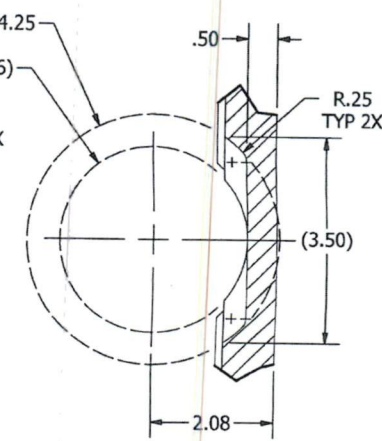
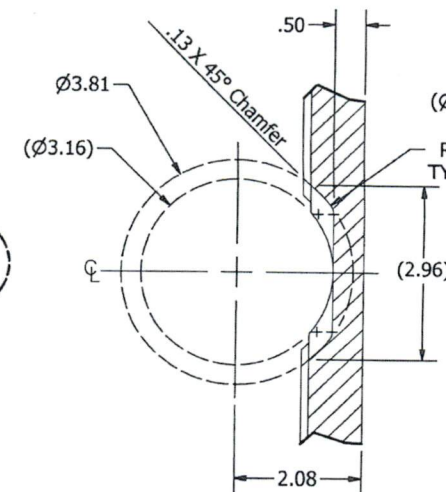
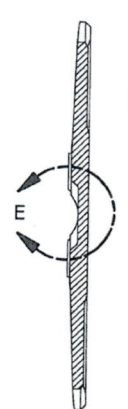
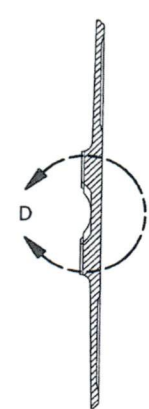
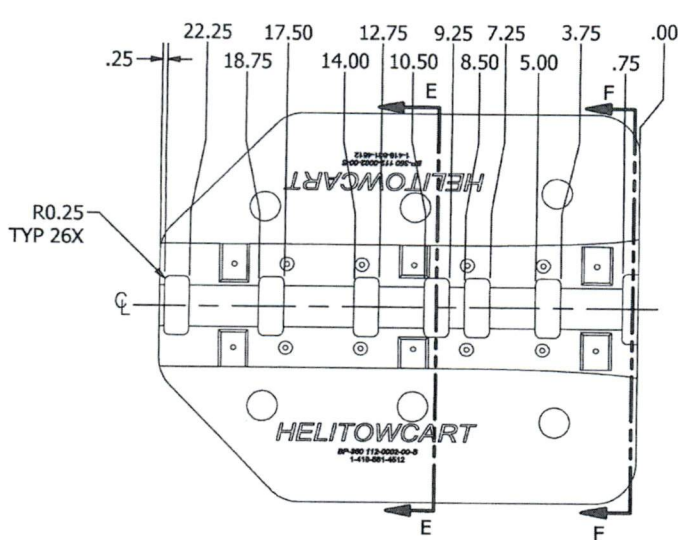
SECTION B-B SCALE 1 / 6										PAD STREAM LINE		POLYETHYLENE UHMW		BLACK		1.00	
1		1		314-0018-01-S				DESCRIPTION				MATERIAL		SPECIFICATION		SIZE	
ITEM		QTY		PART NUMBER													
								UNLESS OTHERWISE SPECIFIED				DRAWN: S. BERNIER		2008/07/31		 <div>Yoriot Inc. 3400, Avenue-Victoria St-Michel, Lévis (Québec) Canada, G7A 3J7 Tel (418) 841-5152 Fax (418) 834-2291 www.heli-tow-cart.com</div>	
								DIMENSIONS ARE IN INCHES				DESIGNED: S. BERNIER		2008/07/31			
								LINEAR				X.XX ±0.030					
								TOLERANCES				X.XXX ±0.010					
								ANGULAR TOLERANCES: ± 30°				CHECKED:					
								ALL MACHINE SURFACE				STRESS:					
												WEIGHT:				BEARPAW - BP350 PAD STREAMLINE	
								MATERIAL SPEC:				APPROVED:					
								SIZE:				APPROVED:					
								HEAT TREAT:				APPROVED: M. ZGELA		2008/07/31			
								PROTECTION:									
								IDENTIFYING METHOD:									
DASH NO		NEXT ASSY		QTY PER ACFT		MODEL						SCALE: WTS		CAD FILE #		SHEET: 1 OF 4	
												CAGE CODE		SIZE		DRAWING No	
												B		314-0018-01-S		REV	
														(VNR 106-S)		E	



BEARPAW - BP350
PAD STREAMLINE

CAGE CODE: B
DRAWING No: 314-0018-01-S
(VNR 106-S)
REV E

1	DWG No	314-0018-01-S	3	SHT No	4		
REVISIONS							
1	REWORKABLE	2	NONREWORKABLE	3	NOTED	4	NA
ZONE	REV	DESCRIPTION				DR. & DATE	STRESS
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION					
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD					
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD					
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES					
	E	ADDED RECESSES FOR SKID WEAR SHOES AND LEAF SPRING					



UNLESS OTHERWISE SPECIFIED				DRAWN: S. BERNIER		2008/07/31
DIMENSIONS ARE IN INCHES				DESIGNED: S. BERNIER		2008/07/31
LINEAR TOLERANCES				CHECKED:		
X.XX ±0.030				STRESS:		
X.XXX ±0.010				WEIGHT:		
ANGULAR TOLERANCES ±1° 30'				APPROVED:		
ALL MACHINE SURFACE				APPROVED:		
MATERIAL:				APPROVED: M. ZGELA		2008/07/31
MATERIAL SPEC:				SCALE:		CAS FILE #
SIZE:				SHEET: 3 OF 4		
HEAT TREAT:						
PROTECTION:						
IDENTIFYING METHOD:						
DASH NO	NEXT ASSY	QTY PER ACT	MODEL			

BEARPAW - BP350
PAD STREAMLINE

CAGE CODE: B
DRAWING NO: 314-0018-01-S
REV: E

4

3

2

1

DWG No 314-0018-01-S

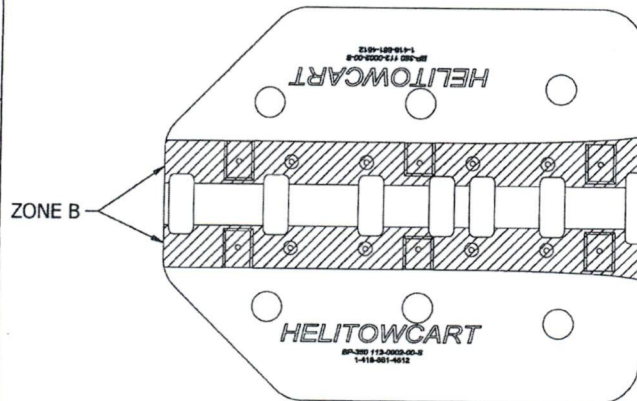
4 OF 4

REVISIONS

1	2	3	4
1	REWORKABLE	2	NONREWORKABLE
3	NOTED	4	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES	
	E	ADDED RECESSES FOR SKID WEAR SHOES AND LEAF SPRING	

DR. & DATE

STRESS



TOP

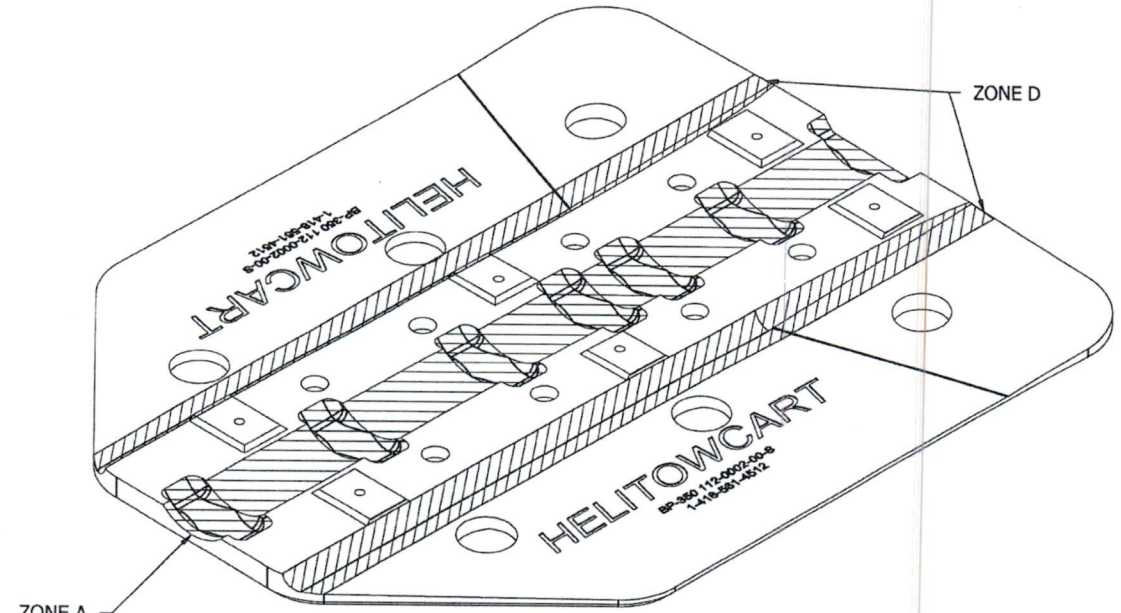
ZONE B

ZONE E

ZONE C

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART


BOTTOM



ZONE A

ZONE D

ISO

				UNLESS OTHERWISE SPECIFIED		DRAWN: S. BERNIER		2008/07/31		 <div>Yanori Inc. 840 Anderson Road S44 Kicora, ABV1 (Calgary) Canada T2A 2T7 Tel: (403) 541-5112 Fax: (403) 556-2291 www.helicopter.com</div>	
				DIMENSIONS ARE IN INCHES		DESIGNED: S. BERNIER		2008/07/31			
				LINEAR TOLERANCES		X.XX ±0.030 X.XXX ±0.010		CHECKED:			
				ANGULAR TOLERANCES: ±0° 30'				STRESS:			
				ALL MACHINE SURFACE		WEIGHT:				<div>BEARPAW - BP350 PAD STREAMLINE</div> <div>CAGE CODE: SIZE DRAWING NO. REV</div> <div>B 314-0018-01-S E</div> <div>(VNR 106-S)</div> <div>SCALE: WTS ENG FILE # SHEET: 4 OF 4</div>	
				MATERIAL:		APPROVED:					
				MATERIAL SPEC:		APPROVED:					
				SIZE:		APPROVED:					
				HEAT TREAT:		APPROVED:					
				PROTECTION:		APPROVED: M. ZGELA		2008/07/31			
				IDENTIFYING METHOD:							
DASH NO		NEXT ASSY		QTY PER ACFT		MODEL					



BEARPAW - BP350
PAD STREAMLINE

CAGE CODE:	SIZE:	DRAWING No:	REV:
B	B	314-0018-01-S	E
		(VNR 106-S)	

Varrell Inc.
840 Maple-Victoria
St. Catharines, ON L2M 3P7
Tel: (416) 541-3512
Fax: (416) 541-3291
www.helitowcart.com

Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev G)

APPROVED BY:



DATE: DECEMBER 21, 2012

Mirko Zgela
Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
G	December 21, 2012	Updated Tolerance data regarding Pad and Updated referenced document identification and revisions	M.Z.

 2013 02 09

Page 1/3

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-E	BearPaw Model BP350 – Installation Instruction – AS350/355 Series Helicopters	F	DAR 310	Dec 21, 2012
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	D	DAR 310	Dec 21, 2012
314-0002-15 (VNR084)	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
314-0004-15 (VNR085)	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
314-0005-15 (VNR086)	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
314-0007-15 (VNR089)	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
314-0012-01 (VNR099)	Filler Block ¼"	A (R01)	DAR 310	Aug 8, 2006
314-0018-01 (VNR106)	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
314-0018-01-S (VNR106-S)	BearPaw BP350 – Pad Streamline	D	DAR 310	Dec 21, 2012
314-0019-15 (VNR107)	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05	Heat Shrink Specifications	A	N/A	Sept 6, 2006

TABLE OF CONTENTS:

INTRODUCTION	p.2
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.3
INSTALLATION	p.4
BearPaw Installation	p.4
BearPaw Removal	p.6
Weight & Balance	p.6
Parts List	p.7
INSPECTION	p.8
Life Limited Items	p.8
Pre-Flight	p.8
Periodic Inspection Schedule	p.8
500 Hour or Yearly Inspection Details	p.8
Overhaul Requirements	p.9
REVISIONS & APPROVAL	p.10
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Drawing)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION**BearPaw Installation**

Reference Documentation:

[1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

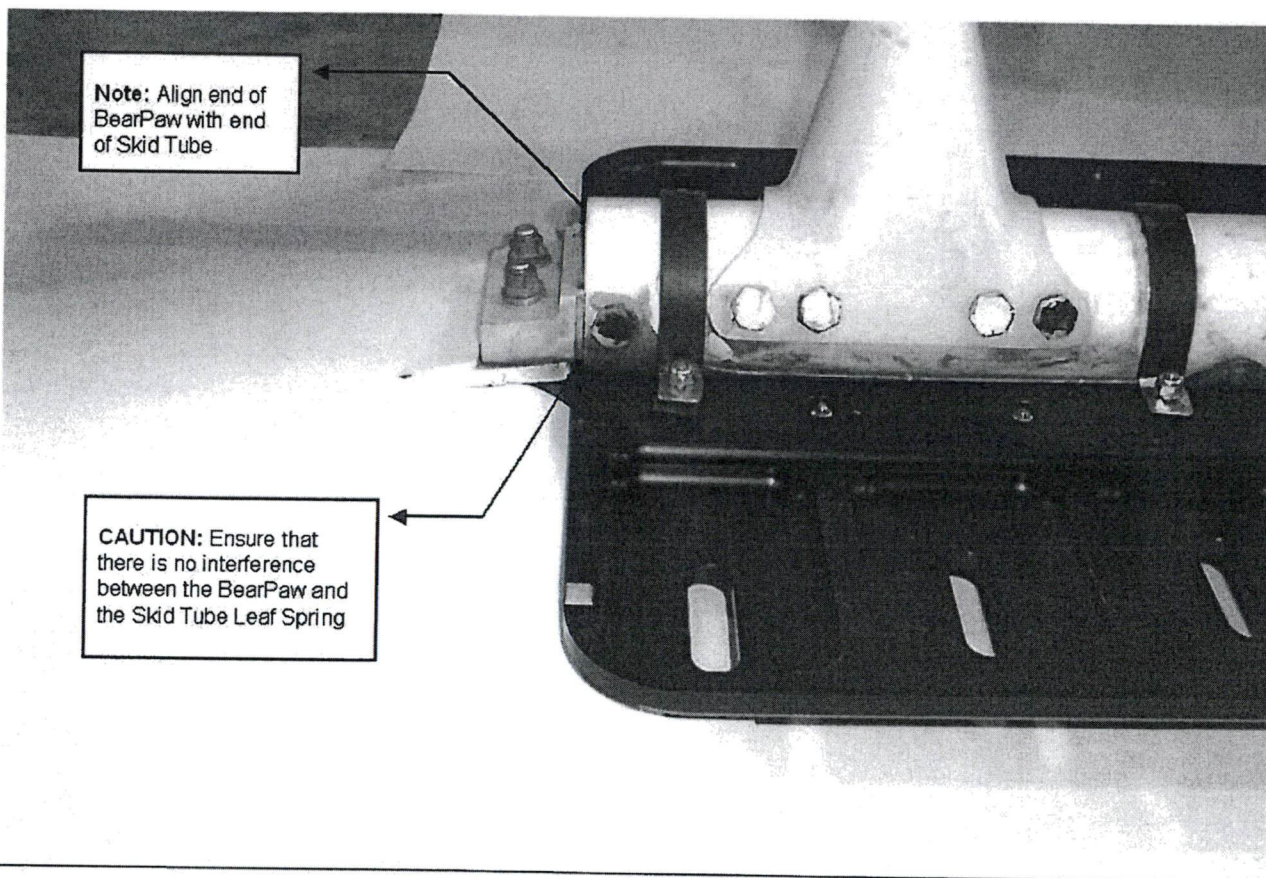
Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01) or (P/N 314-0018-01-S Streamline);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kG
Helitowcart BearPaw Model BP350 - <u>Streamline</u> (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kG

Note: Weight and moment provided are for full kit installation.

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part / Dwg No.	Additional Drawing Reference No./ Name
BearPaw Model BP350	1	112-0002-00	112-0002-00 / BearPaw Assembly, or 112-0002-00-S /Bear Paw Streamline Assembly
BearPaw pad ⁽¹⁾	1	314-0018-01	BearPaw BP350 – Pad (VNR106)
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	BearPaw BP350 – Pad Streamline (VNR106-S)
U Shaped Clips	3	314-0019-15	BearPaw BP350 - U Shaped Clips (VNR107)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks 1/4"	6	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	IceBlade Assembly (VNR086)
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use pocked shaped BearPaw Pad P/N 314-0018-01 for assembly P/N 112-0002-00. Use streamlined Pad P/N 314-0018-01-S for assembly P/N 112-0002-00-S as applicable.

INSPECTION

Life Limited Items

Three are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
Tables 5 & 6 – Tolerances for cracks & wear and
Annex B – BearPaw Allowable Damage Drawing 314-0018-01 (VNR-106) page 2 of 2 for Pocket pad
or 314-0018-01-S (VNR106-S) page 3 of 3 for Streamlined Pad.

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
Tables 5 & 6 – Tolerances for cracks & wear and
Annex B – BearPaw Allowable Damage Drawing 314-0018-01 (VNR-106) page 2 of 2 for Pocket pad
or 314-0018-01-S (VNR106-S) page 3 of 3 for Streamlined Pad.

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	0,050	<u>Stiffeners:</u> NO cracks in stiffeners.

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000; and 0,88	0,250	
C	0,273 to 0,348 (variable thickness)	0,075	<u>Pockets:</u> Cracks are acceptable in the pocket under the Helitowcart BearPaw to a maximum length of 0,5". Stop drill cracks with a 0,125" hole.
D	0,49 (thickness after radius)	0,075	No cracks in the radius
E	0,38	0,075	No cracks in the BearPaw contour

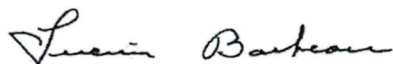
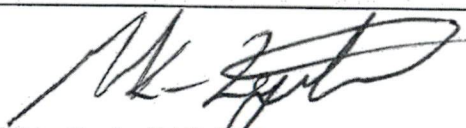
Overhaul Requirements

- Not applicable for the designated application of this device.

REVISIONS & APPROVAL**Revisions**

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to C of G data
December 21, 2012	F	Updated Pad Tolerances and Document identifications . Improved page set up for reader convenience.

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Date: Dec 21, 2012
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	Date: Dec 21, 2012

Annex A

See: BearPaw Assembly, drawing no. (112-0002-00) for Pocket style pad or;
BearPaw Assembly, drawing no. (112-0002-00-S) for Streamline style pad

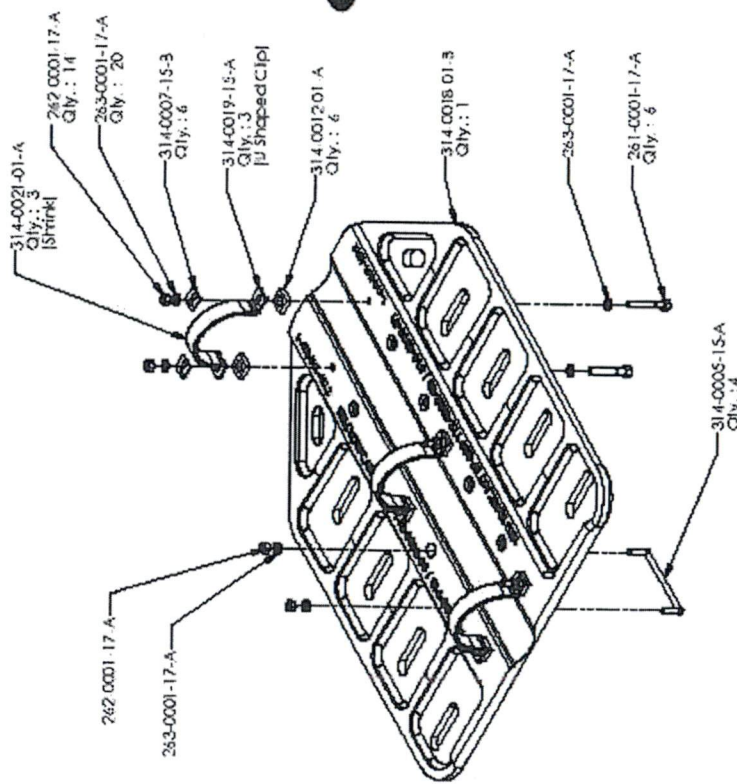
Annex B

See: BearPaw Pad, drawing no. 314-0018-01 (VNR106) page 2 of 2 for Pocket style pad or;
BearPaw Pad, drawing no. 314-0018-01-S (VNR106-S) page 3 of 3 for Streamline style pad.

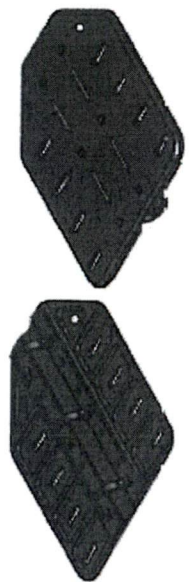
Annex A

BearPaw Assembly, Drawing no. 112-0002-00.

No.	Qty.	Description	Part N	Rev N
1	1	Bearpaw BP-350 - Pod	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-15	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Stuffed clip support	314-0027-15	B
5	6	Bearpaw - Filter Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-15	A
7	6	Ball AN4-14 A	261-0001-17	A
8	20	Washer AN60-416	263-0001-17	A
9	14	NUT MS20365-428	262-0001-17	A



Note : Iceblade assembly can be omitted from installation (Optional)



Vendor:	HELI TOW CART
Part N:	314-0020-00
Rev N:	F
Quantity:	1
Unit Price:	112.0000
Total Price:	112.0000

REV	DATE	BY
1	20-REV-00	CLL
2	25-REV-00	CLL

Annex A

BearPaw Assembly, Drawing no. P/N 112-0002-00-S.

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
1	3	314-0019-15	U SHAPED CLIP	STEEL		
2	6	314-0012-01	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262-0001-17	MOD335-428	STEEL		1/4-28
6	6	261-0001-17	AN4-14A	STEEL		1/4-28 UNF
7	20	263-0001-17	AN4-14A	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314-0021-01	SHRINK			

REVISIONS	DATE	BY	DESCRIPTION
1	12-0002-00-S		REVISIONS
2			
3			
4			

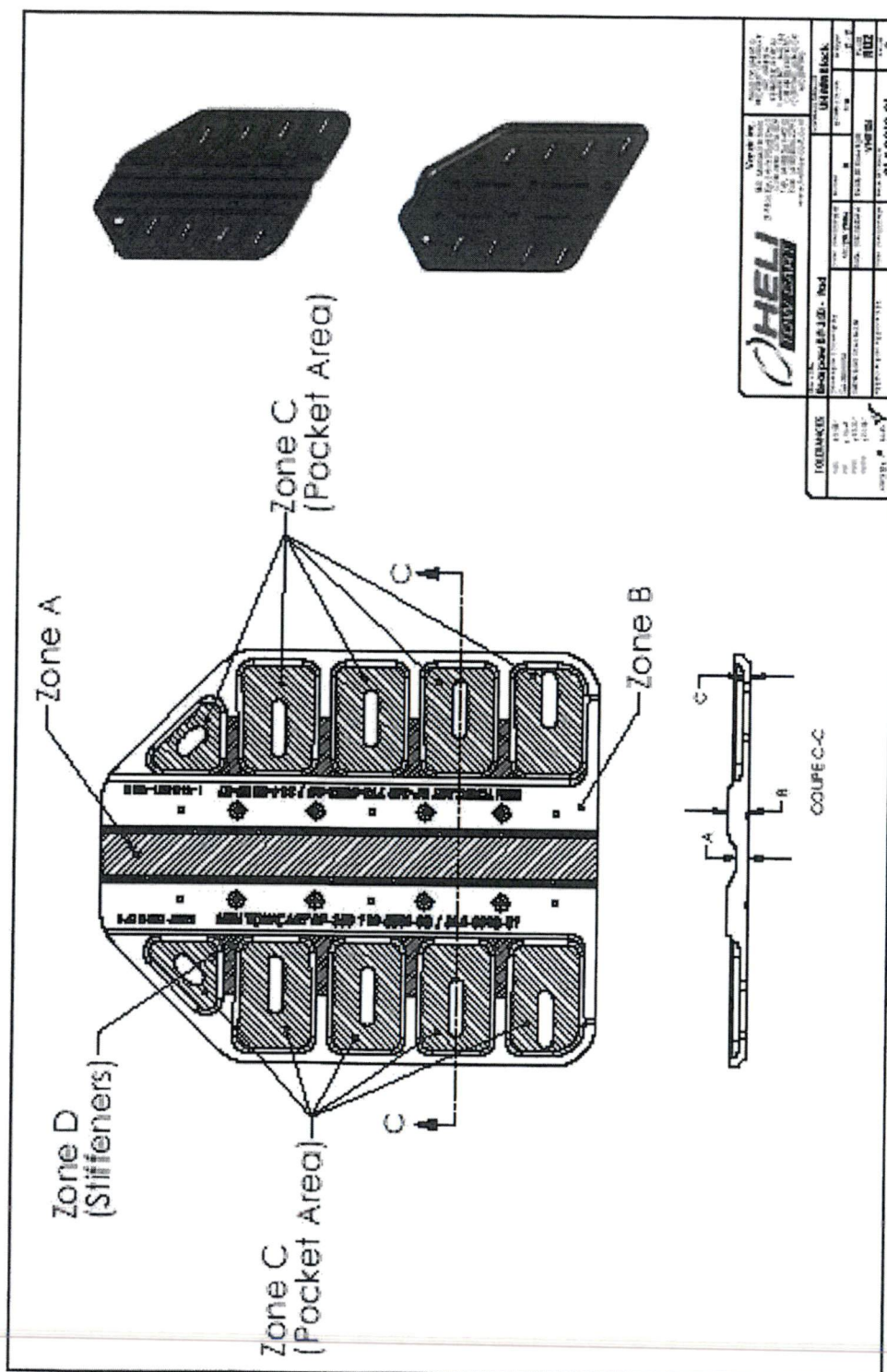
ZONE	REV	DESCRIPTION
A		ADDITION OF STREAMLINE PAD
B		ADDITION OF VENT HOLES ON THE
C		MODIFICATION OF VENT HOLES ON THE
D		STREAMLINE PAD
		DELETED REVISIONS IDENTIFICATION IN PART
		NUMBER

NOTE: ICEBLADE ASSEMBLY, ITEM4,
CAN BE OMITTED FROM INSTALLATION
(OPTIONAL)

THE ABOVE SPECIFICATIONS ARE THE PROPERTY OF HELITOWCART. NO PART OF THIS DOCUMENT IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF HELITOWCART.

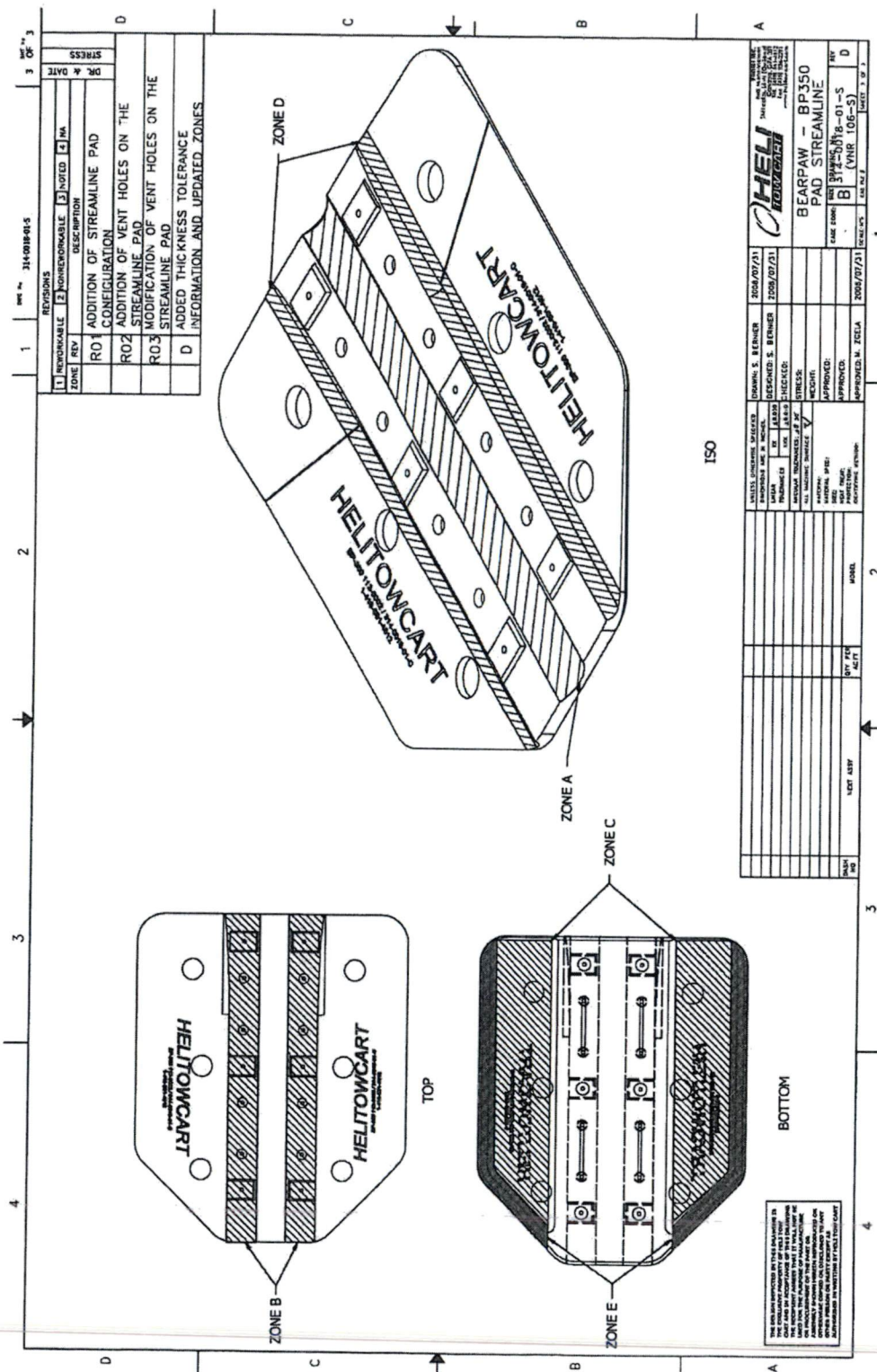
Annex B

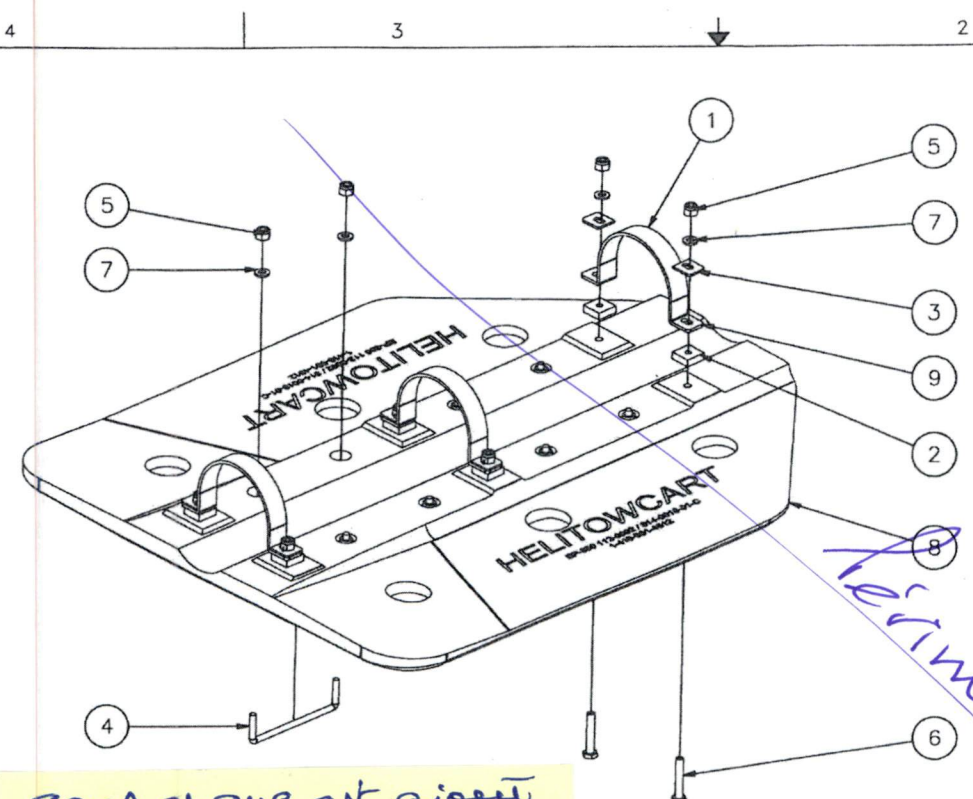
BearPaw Pad, Drawing no. 314-0018-01 (VNR106) Page 2 of 2 Pocket Style Pad.



Annex B

BearPaw Pad, Drawing no. 314-0018-01-S (VNR106-S) Page 3 of 3 Streamline Style Pad.





Seul chang. est ajouté
de date de rev. D
qui est du 2012 12 21
correction
faite lors de E04(6)
2015 04 10 MB

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

1	3	314-0019-15	U SHAPED CLIP	STEEL		
2	6	314-0012-01	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262-0001-17	MD20365-42B	STEEL		1/4-28
6	6	261-0001-17	AN4-14A	STEEL		1/4-28 UNF
7	20	263-0001-17	AN960-416	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314-0021-01	SHRINK			
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE

UNLESS OTHERWISE SPECIFIED:			DRAWN: S. BERNIER		2008/07/31
DIMENSIONS ARE IN INCHES:			DESIGNED: S. BERNIER		2008/07/31
LINEAR	XX	30.030	CHECKED:		
TOLERANCES	XXX	30.010	STRESS:		
ANGULAR TOLERANCES	XX	30	WEIGHT:		
ALL MACHINE SURFACES	✓		APPROVED:		
MATERIAL:			APPROVED:		
SPEC:			APPROVED: M. ZOGG		2008/07/31
SIZE:			SCALE: N/A		
HEAT TREAT:			CAGE CODE		B 112-0002-00-S
IDENTIFYING METHOD:			REVISION		D
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL		

1		DR: No 112-0002-00-S		1 OF 1	
REVISIONS					
1		2		3	
1		2		3	
1		2		3	
ZONE	REV	DESCRIPTION			
A		ADDITION OF STREAMLINE PAD CONFIGURATION			
B		ADDITION OF VENT HOLES ON THE STREAMLINE PAD			
C		MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD			
D		DELETED REVISIONS IDENTIFICATION IN PART NUMBER			
21 DEC. 2012					

NOTE: ICEBLADE ASSEMBLY, ITEM4, CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

112-0002-00-S- rev D

D. Bauleau 2015 04 10

2015 04 10
Aucun chang. au dessin.
Seulement ajout de
date qui aurait due
être là au préalable
lors de l'émission de
la version D. JB

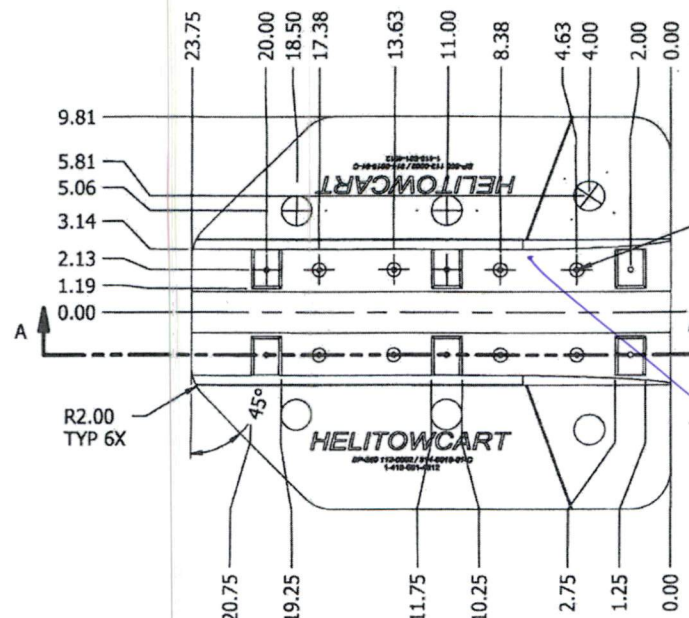
DWG NO 314-0018-01-S

SHEET 3 OF 3

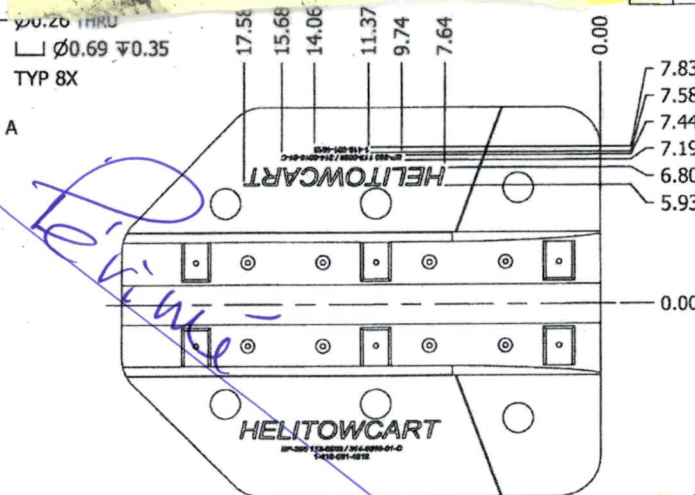
REVISIONS

1	REWORKABLE	2	NONREWORKABLE	3	NOTED	4	NA	DR. & DATE	STRESS
ZONE	REV	DESCRIPTION							
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION							
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD							
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD							
C. 2012	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES							

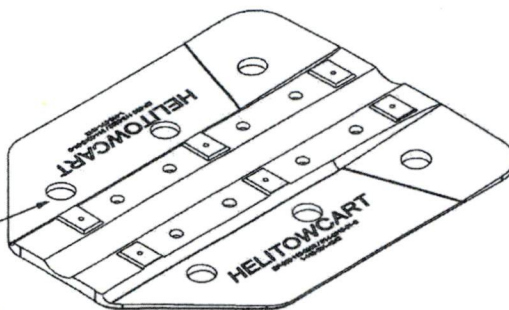
EO 14176
EO HTC-EO-0709-003 Rev NC
DATE 2015/04/02
APPROVED: [Signature] DAR # 510



TOP SCALE 1/6

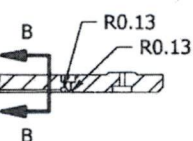


TOP SCALE 1/6



0.13 X 45° Chamfer TYP

1.00 ± 0.063
0.88 ± 0.063
0.25
0.13
0.00

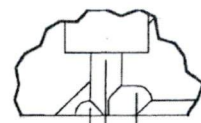


DETAIL B SCALE 1/2



Ø1.50 THRU

SECTION A-A SCALE 1/6



DETAIL F SCALE 1:1

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

1	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1.00
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
			UNLESS OTHERWISE SPECIFIED	DRAWN: S. BERNER	2008/07/31	
			DIMENSIONS ARE IN INCHES	DESIGNED: S. BERNER	2008/07/31	
			LINEAR TOLERANCES	CHECKED:		
			XXX ±0.030			
			XXX ±0.016			
			ANGULAR TOLERANCES ±0.30°			
			ALL MACHINE SURFACES			
			MATERIAL:	APPROVED:		
			SIZE:	APPROVED:		
			HEAT TREAT:	APPROVED: M. ZOEGLER	2008/07/31	
			IDENTIFYING METHOD:			
DASH NO	NEXT ASSY	QTY PER ACT	MODEL	SCALE: mm	CAD FILE	SHEET: 1 OF 3



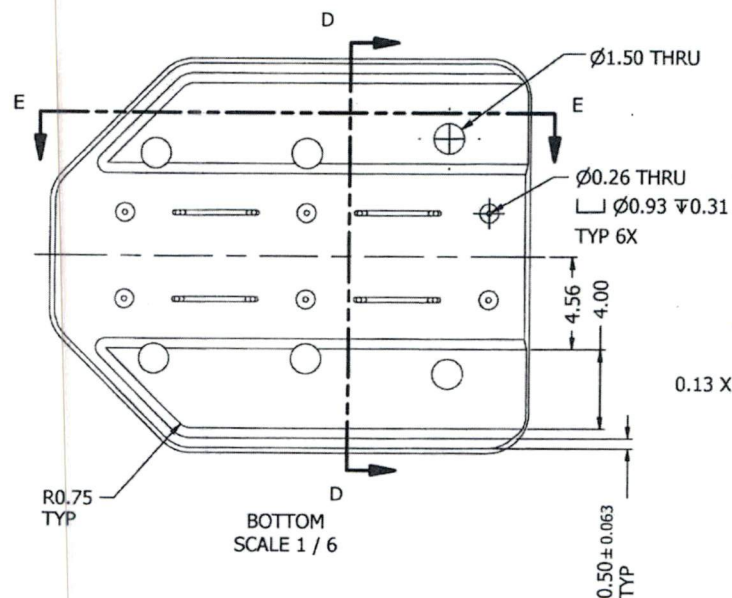
BEARPAW - BP350 PAD STREAMLINE

CAGE CODE B 314-0018-01-S (VNR 106-S) REV D

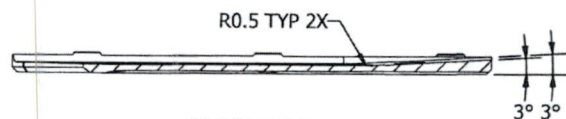
314-0018-01-S rev D

2015 04 10

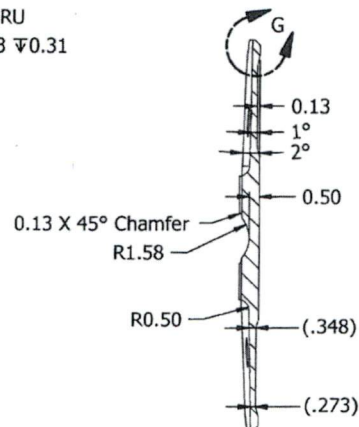
1		DWG No 314-0018-01-S		2 OF 3			
REVISIONS				DR. & DATE	STRESS		
1	REWORKABLE	2	NONREWORKABLE			3	NOTED
ZONE	REV	DESCRIPTION					
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION					
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD					
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD					
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES					



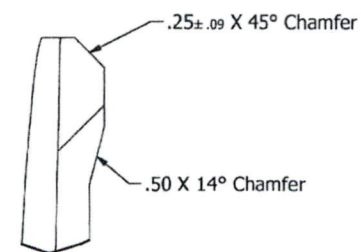
BOTTOM
SCALE 1 / 6



SECTION E-E
SCALE 1 / 6




SECTION D-D
SCALE 1 / 6



DETAIL G
SCALE 1 : 1

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR REPRODUCTION OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		DRAWN: S. BERNIER 2008/07/31		 <div>Vandy Inc. 840 Alamo-Picasso 314 Locust, 1st & 2nd Cape Girardeau, MO 63703 Tel: (573) 341-1117 Fax: (573) 341-2291 www.helitowcart.com</div>	<div>BEARPAW - BP350 PAD STREAMLINE</div>	CASE CODE: <div>SIZE: B314</div> <div>DRAWING NO: 018-01-S (VNR 106-S)</div> <div>SCALE: 1/6</div> <div>SHEET: 2 OF 3</div>	REV D
				DESIGNED: S. BERNIER 2008/07/31							
				CHECKED:							
				STRESS:							
				WEIGHT:							
				APPROVED:							
				APPROVED:							
				APPROVED: M. ZGELA 2008/07/31							
				MATERIAL: MATERIAL SPEC: SIZE: HEAT TREAT: PROTECTION: IDENTIFYING METHOD:							
DASH NO	NEXT ASSY	QTY PER AC FT	MODEL								

D

C



B

A



B

A

BEARPAW - BP350
PAD STREAMLINE

CASE CODE:	SIZE	DRAWING No.	REV
.	B	314-0018-01-S (VNR 106-S)	D

SCALE: NTS	CAD FILE #	SHEET: 3 OF 3
------------	------------	---------------

Helitowcart – NON CONFORMITY report	F80-02	Page 1 of 1
Reviewed & approved by:		2006 09 09

Section A - Non conformity description

Product / Output: BP350 PAD	NCR: 2016-06-09-nb-01 yyyy-mm-dd-initials-#
Product no: 112-0002-00-S	ASS no: —
Non conformities:	CARPAR no: —
New Dwg by Aiatech has rev. C engraved with its P/N	Supplier: Aiatech
IT should now be without	Supplier ref no: —
/112-0002-00-S	
	Quantity rejected: —
Initiated by: P. Baileau Date: 2016 06 09	Quantity in the lot: 1 Dwg

Section B – Prescribed disposition

Decision & notes:	<input type="checkbox"/> Wait <input type="checkbox"/> Discard <input type="checkbox"/> Return to supplier	<input checked="" type="checkbox"/> Repair <input type="checkbox"/> Use as is <input type="checkbox"/> Derogation (=use as is with or without repair)
Actions	Resp	Verified by
1- Get Dwg stp file modified by Renaud Barthelot-Licher	RM	NP 2016 09 22
Prescribed by: P. Baileau Date: 2016-06-09		

Section C – Final verification

Decision & notes:
Dwg has been corrected to have only the finished P/N on the Pad.
Closed by: P. Baileau Date: 2016 09 22



www.helitowcart.com
By Vanair inc.

Bon Commande

Supplier: Aviatech
Contact: Renaud Berthelot-Richer
Coordinates: 2595 Rue St-Olivier
Trois-Rivières, Qc, G9A 4G1

renaudb@ats-ast.com
819-601-8049 ext 211

P.O. No: nb - 160203- 03b
(initials-yyymmdd-sequence)
Ship to: Helitowcart
Nathalie Barbeau 418 561 4512

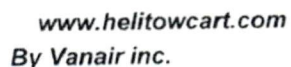
Instructions:

Total Qty		Description	Rev.	Due Date	Currency:	
					Unit Price	Amount
		Ref Votre soumission no X2016-02 Rev NC				
		EO pour modification de relief de Bearpaws Pads Modèle BP350 (ajouter dégagements continus pour têtes de boulons de wearshoe Dart)				
1		Conception de la modification (dégagement pour les têtes de boulons)			\$450.00	\$450.00
1		Mise à jour du dessin d'assemblage et du dessin du pad			\$545.00	\$545.00
1		Préparation du document d'ingénierie (Technical memo) pour justifier l'aspect structurel de modif & maj de la MDL			\$795.00	\$795.00
1		Maj des dessins Streamline en annexe des instructions d'installation (installation, cracks & wear zones)			\$150.00	\$150.00
		Addenda "a"				
1		Temps suppl. En conception et en rech d'info auprès du client			\$720.00	\$720.00
1		Temps suppl. De mise en plan			\$285.00	\$285.00
1		Temps suppl. En structure			\$340.00	\$340.00
1		Implication suppl du DAR			\$300.00	\$300.00
		Notes:				
		Nathalie fournit les données fournies par Simon Ebacher de Canadian Helicopter qui nous informe de la position des boulons divers en fonction des différentes générations de Skids de Dart wear shoes.				
		Nathalie fournit un croquis de suggestion de dégagements continus en longueur afin d'éviter de les faire de petite taille pour chaque boulon.				
		Requis: Fin mars-début avril 2016				
1		Ajustement des Tolérances de fabrication des Pads de BP44 pour refléter le même principe que le pad de BP350			\$190.00	\$190.00

Issued by: Nathalie Barbeau
Date: 2016 04 27

Helitowcart (Vanair inc.): 877A Alphonse-Desrochers, St-Nicolas, Qc, Canada, G7A 5K6
tel: 418-561-4512, Fax: 418-836-4575, info@helitowcart.com

Subtotal	\$3,775.00
Total	
TPS	
TVQ	
Shipping	
Total	



Supplier:	Aviatech
Contact:	Renaud Berthelot-Richer
Coordinates:	2595 Rue St-Olivier Trois-Rivières, Qc, G9A 4G1

renaudb@ats-ast.com
819-601-8049 ext 211

Instructions:

P.O. No:

nb - 160203- 03b

(initials-yymmdd-sequence)

Ship to:

Helitowcart

Nathalie Barbeau 418 561 4512

Subtotal	\$3,775.00
----------	------------

Issued by: *Nathalie Barbeau*

Date: 2016 04 27

Helitowcart (Vanair inc.): 877A Alphonse-Desrochers, St-Nicolas, Qc, Canada, G7A 5K6

tel: 418-561-4512, Fax: 418-836-4575, info@helitowcart.com

Total

\$3,775.00

Total

TPS

TVQ

-Shipping

Total

434131

Solde a Pagar

- 970.
2 3370.31



www.helitowcart.com
By Vanair inc.

Bon Commande

Supplier: Aviatech
Contact: Renaud Berthelot-Richer
Coordinates: 2595 Rue St-Olivier
Trois-Rivières, Qc, G9A 4G1

renaudb@ats-ast.com
819-601-8049 ext 211

P.O. No:

nb - 160203- 03a

(initials-yymmdd-sequence)

Ship to:

Helitowcart

Nathalie Barbeau 418 561 4512

Instructions:

Total Qty		Description	Rev.	Due Date	Currency:	
					Unit Price	Amount
		Ref Votre soumission no X2016-02 Rev NC				
		EO pour modification de relief de Bearpaws Pads Modèle BP350 (ajouter dégagements continus pour têtes de boulons de wearshoe Dart)				
1		Conception de la modification (dégagement pour les têtes de boulons)			\$450.00	\$450.00
1		Mise à jour du dessin d'assemblage et du dessin du pad			\$545.00	\$545.00
1		Préparation du document d'ingénierie (Technical memo) pour justifier l'aspect structurel de modif & maj de la MDL			\$795.00	\$795.00
1		Maj des dessins Streamline en annexe des instructions d'installation (installation, cracks & wear zones)			\$150.00	\$150.00
		Addenda "a"				
1		Temps suppl. En conception et en rech d'info auprès du client			\$720.00	\$720.00
1		Temps suppl. De mise en plan			\$285.00	\$285.00
1		Temps suppl. En structure			\$340.00	\$340.00
1		Implication suppl du DAR			\$300.00	\$300.00
		Notes:				
		Nathalie fournit les données fournies par Simon Ebacher de Canadian Helicopter qui nous informe de la position des boulons divers				
		en fonction des différentes générations de Skids de Dart wear shoes.				
		Nathalie fournit un croquis de suggestion de dégagements continus en longueur afin d'éviter de les faire de petite taille pour chaque boulon.				
		Requis: Fin mars-début avril 2016				

Subtotal \$3,585.00

Issued by: Nathalie Barbeau

Date: 2016 04 26

Total

TPS

TVQ

Shipping

Total

Helitowcart (Vanair inc.): 877A Alphonse-Desrochers, St-Nicolas, Qc, Canada, G7A 5K6

tel: 418-561-4512, Fax: 418-836-4575, info@helitowcart.com

Le 21 avril 2016
Dossier: X2016-12 Rev NC

Mme. Nathalie Barbeau
Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis, QC
G7A 5K6

Sujet: Modification du mandat : Modification au concept du BearPaw pour l'installation sur les hélicoptères AS350/355 équipés de *wear pads*

Mme. Barbeau,

Les dommages observés sur les bearpaws sont beaucoup plus importants que ce qui avait été présenté au départ lors de l'estimé de coût X2016-02 (voir Figure 1 et Figure 2). La nécessité de permettre une rotation et un déplacement vers l'arrière des *bearpaws* est un nouveau requis qui n'était pas pris en compte lors de l'estimé initial. Afin de bien définir le problème avec le client et trouver une solution, du temps supplémentaire en recherche d'information et en conception a été requis. De plus, l'analyse de structure et l'implication du DAR seront plus importantes que prévu en raison de l'importance des modifications au concept.

Les coûts ci-dessous s'ajoutent à la soumission précédente X2016-02 et permettront de réaliser les travaux supplémentaires requis, à l'entière satisfaction de Canadian Helicopters Limited.

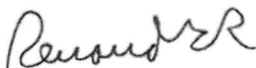
Description	Coût
a. Temps supplémentaire en conception et en recherche d'information auprès du client	720 \$
b. Temps supplémentaire de mise en plan	285 \$
c. Temps supplémentaire en structure	340 \$
d. Implication supplémentaire du DAR	300 \$
TOTAL :	1645 \$

Horaire et Paiements

La soumission est d'un montant de 1645 \$ et pourra être complétée avant la fin avril 2016 sous réception d'un PO et d'un dépôt de 50%. La validité de la présente soumission est de 30 jours.

Pour toute question, n'hésitez pas à communiquer avec moi par téléphone ou par courriel.

Sincèrement,



Renaud Berthelot-Richer, ing.
renaudb@ats-ast.com
Tél. 819-601-8049 #211



Figure 1 – Dommages tels que présentés lors de l'estimé de coûts X2016-02

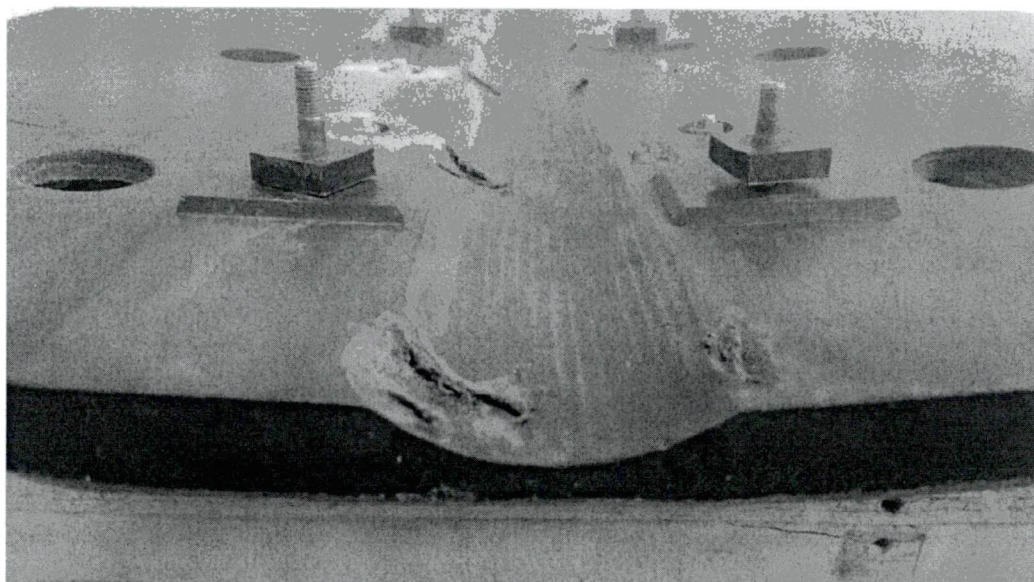


Figure 2 – Dommages réels influençant les coûts du projet

Posté 2016 02 03
Bon Commande

Supplier:
Contact:
Coordinates:

Aviatech
Renaud Berthelot-Richer
2595 Rue St-Olivier
Trois-Rivières, Qc, G9A 4G1

renaudb@ats-ast.com
819-601-8049 ext 211

P.O. No:	nb - 160203- 03 (initials-vymmdd-sequence)
----------	---

Ship to: Helitowcart
Nathalie Barbeau 418 561 4512

Instructions:

[illegible]

Issued by:
Date:

Nathalie Barbeau

Date: 2016 02 03

Helitowcart (Vanair inc.): 877A Alphonse-Desrochers, St-Nicolas, Qc, Canada, G7A 5K6
tel: 418-561-4512. Fax: 418-836-4575. info@helitowcart.com

Subtotal	\$1,940.00
Total	
TPS	
TVQ	
Shipping	
Total	

Supplier:	Aviatech
Contact:	Renaud Berthelot-Richer
Coordinates:	2595 Rue St-Olivier Trois-Rivières, Qc, G9A 4G1

renaudb@ats-ast.com
819-601-8049 ext 211

P.O. No:	nb - 160203- 03
----------	-----------------

(initials-vvmmdd-sequence)

Ship to:	Helitowcart
	Nathalie Barbeau 418 561 4512

Instructions:

[illegible]

Issued by:	Nathalie Barbeau
Date:	2016 02 03

Helitowcart (Vanair inc.): 877A Alphonse-Desrochers, St-Nicolas, Qc, Canada, G7A 5K6
tel: 418-561-4512, Fax: 418-836-4575, info@helitowcart.com

Subtotal	\$1,940.00
Total	
TPS	
TVQ	
Shipping	
Total	

Supplier:
Contact:
Coordinates:

Aviatech
Renaud Berthelot-Richer
2595 Rue St-Olivier
Trois-Rivières, Qc, G9A 4G1

renaudb@ats-ast.com
819-601-8049 ext 211

P.O. No:	nb - 160203- 03 (initials-yyymmdd-sequence)
----------	--

Ship to: Helitowcart
Nathalie Barbeau 418 561 4512

Instructions:

[illegible]

Issued by:
Date:

Nathalie Barbeau

2016 02 03

Helitowcart (Vanair inc.): 877A Alphonse-Desrochers, St-Nicolas, Qc, Canada, G7A 5K6

tel: 418-561-4512, Fax: 418-836-4575, info@helitowcart.com

Subtotal	\$1,940.00
-----------------	-------------------

Total

TPS

TVQ

Shipping

Shipping

Total

✓ **Nathalie Barbeau**

From: Nathalie Barbeau <nbarbeau@helitowcart.com>
Sent: 03 February 2016 15:46
To: 'Renaud Berthelot-Richer'
Cc: 'Nathalie Barbeau'
Subject: Helitowcart - PO pour ECO 7 - Dégagement sur pad de BP350 pour boulons de wearshoe de skids
Attachments: PO nb-160203-03 Aviatech (EO7_padsBP350_skidboltsedge).pdf

Allo Renaud,

ADMIN :

Tel que discuté, trouve ci-joint copie de notre PO. Je viens de te poster le chèque de dépôt avec le PO.

TECHNIQUE :

Je t'ai posté avec le PO, une copie de ma suggestion de zones de dégagement. Je l'ai scannée, trouve la ci-joint.
À toi de voir si c'est un bon compromis pour ne dégager que ce qui est requis pour les boulons de wearshoes de skids.
Je te ferai parvenir dans les prochains courriels, tout le matériel dimensionnel que Simon Ebacher de Canadian Heli a pris soins de mesurer pour nous faciliter la tâche.

N'hésite pas à consulter Simon Ebacher de Canadian heli. Ses coordonnées sont sur les courriels que je te ferai parvenir.
Je veux qu'il soit satisfait de notre solution car c'est un client important pour nous.

J'attends de tes nouvelles lorsque tu seras prêt à t'y mettre. Si on pouvait compléter le tout pour avril cela serait parfait. Je suis flexible.

Salutations,

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Tel: +1.418.561.4512 877A Alphonse-Desrochers
Fax: +1.418.836.4575 St-Nicolas, Levis, Qc
Canada, G7A 5K6

HELITOWCART
(VANAIR INC.)
860, RTE MARIE-VICTORIN
ST-NICOLAS (QUÉBEC) G7A 3S9

3156

DATE 20 / 06 / 02
A A A A M M J J

PAYEZ
à l'ordre de

Aviatech Serv. Techniques

970.00 \$

NEUF CENT SOIXANTE DIX



BANQUE ROYALE DU CANADA
GESTION PRIVÉE QUÉBEC PH: 418-648-6870
140 GRANDE ALLÉE E BUREAU 110
QUÉBEC QC G1R 5M8

100 DOLLARS sécurité intégrée

POUR

DÉPÔT 50%



HELITOWCART
(VANAIR INC.)

PAR

S. Barkan

⑈003156⑈ ⑈04715⑈003⑈ 100⑈017⑈3⑈

Le 21 janvier 2016
Dossier: X2016-02 Rev NC

Mme. Nathalie Barbeau
Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis, QC
G7A 5K6

Sujet: Modification au concept du BearPaw pour l'installation sur les hélicoptères AS350/355 équipés de *wear pads*

Mme. Barbeau,

Tel que demandé, nous avons préparé un estimé de coûts pour la modification du concept de BearPaws pour les AS350/355 équipés de *wear pads*. Le présent estimé comprend les éléments suivants :

Description	Coût
a. Conception de la modification (dégagement pour les têtes de boulons)	450 \$
b. Mise à jour du dessin d'assemblage et du dessin du pad	545 \$
c. Préparation du document d'ingénierie (Technical Memorandum) pour justifier l'aspect structurel de la modification et mise à jour de la MDL (Master Drawing List)	795 \$
d. Mise à jour des dessins <i>streamline</i> en annexe des instructions d'installation (installation, cracks & wear zones)	150 \$
TOTAL:	1940 \$


Prendre en note que l'estimé ne comprend pas la mise à jour des dessins de pièce, le raccourcissement du BearPaw et des modifications à la quincaillerie nécessaire pour effectuer l'installation (boulons, rondelles, etc.).

Horaire et Paiements

La soumission est d'un montant de 1940 \$ et pourra être complétée avant la fin avril 2016 sous réception d'un PO et d'un dépôt de 50%. La validité de la présente soumission est de 30 jours.

Pour toute question, n'hésitez pas à communiquer avec moi par téléphone ou par courriel.

Sincèrement,



Renaud Berthelot-Richer, ing.
renaudb@ats-ast.com
Tél. 819-601-8049 #211

Aviatech Services Techniques Inc.
2595, rue St-Olivier
Trois-Rivières, Québec, G9A 4G1
Tel: (819) 601-8049 Fax: (819) 377-7928
Courriel: info@ats-ast.com
Site Internet: www.ats-ast.com

Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: 21 January 2016 11:37
To: nbarbeau@helitowcart.com
Cc: Jean-Francois Lemire
Subject: Estimé Changement Design BearPaw
Attachments: X2016-02 Rev NC - Estimé Changement Design.pdf

Bonjour Nathalie,

Tu trouveras en pièce jointe l'estimé pour le dégagement sur toute la longueur du BearPaw pour les têtes de boulons de wear pads.

Sincèrement,

Renaud

DR. & DATE

NAT.
il suggère ce qui est
en blanc de garder
sans dépayement



DASH NO	NEXT ASSY	QTY PER AC FT	MODEL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.		DRAWN: S. BERNIER		2008/07/31	
LINEAR		XX	±0.030	DESIGNED: S. BERNIER	
TOLERANCES		XXX	±0.010	CHECKED:	
ANGULAR TOLERANCES: ±0.30°		STRESS:			
ALL MACHINE SURFACE: <input checked="" type="checkbox"/>		WEIGHT:			
MATERIAL:		APPROVED:			
MATERIAL SPEC.		APPROVED:			
SIZE		APPROVED:			
HEAT TREAT:		APPROVED: M. ZGELA			
PROTECTION:		2008/07/31			
IDENTIFYING METHOD:					



Nathalie Barbeau

From: Renaud Berthelot-Richer <renaud_br@hotmail.com>
Sent: Thursday, June 16, 2016 11:56 AM
To: Nathalie Barbeau
Subject: RE: Questions vs dossier BearPaws BP350
Attachments: 314-0001-01 Rev D (BearPaw Pad).pdf; 314-0001-01 Rev C (BearPaw Pad).pdf

SOMMAIRE DES
DERNIERS CHANG.
AVANT DE FERMER
ECO A7

Salut Nathalie,

Voici quelques réponses:

- 1) J'ai enlevé toute référence aux révisions du BearPaw 314-0018-01-S. Les instructions s'appliquent à toutes les révisions. La seule distinction est dans l'annexe où je modifie les zones de tolérances au dommage (sans changer les valeurs dans le tableau 6). Je t'envoie une version révisée bientôt.
- 2) Le TM est en révision NC et c'est normal, c'est un nouveau document.
- 3) Je n'ai pas changé de cotes. La page 3 est entièrement nouvelle, la page 4 ajuste les zones de tolérances pour prendre en compte les recesses.
- 4) Voir les changements encadrés en pièce jointe dans la Rev D

Renaud

From: nbarbeau@helitowcart.com
To: renaud_br@hotmail.com
CC: mirkoz@ats-ast.com; nbarbeau@helitowcart.com
Subject: Questions vs dossier BearPaws BP350
Date: Thu, 9 Jun 2016 11:52:36 -0400

Allo Renaud,

J'ai enfin pu m'asseoir pour revoir le dossier que tu m'as envoyé. Chaque fois que je m'y met depuis la réception du colis, je suis dérangée dans la minute qui suit!
J'ai des questions. Svp m'appeler (Je n'ai pas ton cell).

Voici les questions :

1) Instruction d'installation 314-0020-00-E Rev. G

Tout est beau sauf que j'ai noté qu'on fait référence seulement aux version D et E du pad Streamline.

Il me semble qu'il faudrait ajouter les version A et C aussi dans la Table no 3 du Weight and Balance et la Tables no 6 des Tolerances de craques?

Si on garde les infos sur les pads à pockets qui datent du tout début, il me semble qu'on devrait garder aussi les infos pour les pads des autres versions intermédiaires depuis? Suis-je dans le champs?

Si on fait la modif il y aurait la version A et C à ajouter au texte des pages suivantes : 6, 9, 14, 17.

Je m'explique :

Dessin de pad Streamline 112-0002-00-S

Version A (R01) : Pad streamline sans trous (Une dizaine de paires sur le terrain)

Version B (R02) : Pad streamline avec 12 petits trous (jamais fabriqué)

Version C (R03): Pad streamline avec 6 trous (le modèle le plus produit depuis 2008)

Version D : Pad streamline avec 6 trous avec ajustement de tolérances de production du pad. (changement de tolérance fait en 2012)

Version E : Pad streamline avec 6 trous et 7 pockets pour wearshoe bolts de Dart.

Question : Au pire si on ne le fait pas alors les clients des vieux pads je leur envoie les vieilles versions d'instruction d'assemblage si ils me contactent? Ou on pourrait juste faire une lettre addenda pour ajouter cette nuance en cas de besoin?

2) MDL Rev. H

Dans la section des Master Documents en page 2, le dernier document intitulé HTC-TM-0709-001, est toujours en version « NC » alors qu'on indique qu'on l'a changé le 30 mai 2016. Est-ce normal?

Aussi, si je me souviens bien ce document sur la Structural Substantiation ne m'est pas disponible hein? Il est entre vous et TC?

3) Dessin du Pad 314-0018-01-S Rev.E

Pourrais-tu me donner un coup de fil pour m'indiquer toutes les cotes que tu as changé vs les tolérances suite à la discussion avec notre fournisseur de pads? Je voudrais en prendre note à mon dossier de ECO.

4) BP44 Tolérances sur la cartouche de dessin du pad.

On devait aussi changer la cartouche de dessin du Pad de Bearpaw 44. Svp aussi m'indiquer les endroits des cotes changées (il me semble que cela devait être la cartouche) et aussi me dire si tu as changé de version? (J'ai perdu le fil sur ce cas)

J'attends de tes nouvelles dès que possible afin qu'on puisse fermer tout cela!
Merci beaucoup!!

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)

nbarbeau@helitowcart.com

info@helitowcart.com

www.helitowcart.com

Tel: +1.418.561.4512

Fax: +1.418.836.4575

877A Alphonse-Desrochers

St-Nicolas, Levis, Qc

Canada, G7A 5K6

From: Renaud Berthelot-Richer [mailto:renaudb@ats-ast.com]

Sent: Tuesday, May 31, 2016 3:02 PM

To: Nathalie Barbeau <nbarbeau@helitowcart.com>

Cc: Jean-Francois Lemire <jeanfrancoisl@ats-ast.com>

Subject: BearPaws BP350

Bonjour Nathalie,

J'ai le plaisir de t'annoncer que je viens de te poster le package des BearPaws. Tu devrais recevoir le tout d'ici quelques jours.

N'hésite-pas à me contacter au besoin.

Renaud
renaud_br@hotmail.com

Nathalie Barbeau

From: Renaud Berthelot-Richer <renaud_br@hotmail.com>
Sent: Thursday, June 16, 2016 12:12 PM
To: Nathalie Barbeau
Subject: RE: Ajout de notes et Questions vs dossier BearPaws BP350

Salut Nathalie,

5) Je remplacerais "BP-350 112-0002 / 314-0018-01-S Rev C" par "BP-350 314-0018-01-S Rev. E"
Est-ce que ça te convient? Ça voudrait dire que seul le numéro du pad serait marqué, et non celui de l'assemblage (qui pourrait changer sans que le pad change).

6) Le HTC-EO-0709-002 rev. A devrait être signé... Par contre le HTC-MEM-0709-001 rev. A ne l'est pas, j'en parle à Mirko lundi. (et non, tu ne nous tannes pas du tout, c'est juste normal!)

Renaud
cell: 819-448-4283

From: nbarbeau@helitowcart.com
To: renaud_br@hotmail.com
CC: mirko.zgela@cgcocable.ca
Subject: Ajout de notes et Questions vs dossier BearPaws BP350
Date: Thu, 9 Jun 2016 15:00:25 -0400

Renaud,
Il faut que j'ajoute ces deux éléments à ceux mentionnés plus tôt aujourd'hui :

5) Je viens aussi de remarquer que le no de **version de pad gravé sur le pad** est erroné dans le dessin que tu viens de faire en version E.

Il faudrait y voir 314-0018-01-S rev.E
(on avait déjà ce problème avec la version précédente. J'avais envoyé une demande Mirko le 21 mai 2013 pour que ce soit adressé).

6) Svp m'envoyer les copies **signées** par Mirko de ces deux documents : HTC-EO-0709-002 rev.A et HTC-MEM-0709-001 rev.A.

J'ai seulement les copies non-signées en main. (Cela m'a été soulevé en audit de TC)
(Je suis désolée de vous tanner avec cela dans ce cas-ci)

Merci!!

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)

nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Tel: +1.418.561.4512
Fax: +1.418.836.4575

877A Alphonse-Desrochers
St-Nicolas, Levis, Qc
Canada, G7A 5K6

From: Nathalie Barbeau [mailto:nbarbeau@helitowcart.com]

Sent: Thursday, June 9, 2016 11:53 AM

To: 'renaud_br@hotmail.com' <renaud_br@hotmail.com>

Cc: 'Mirko Zgela' <mirkoz@ats-ast.com>; 'Nathalie Barbeau' <nbarbeau@helitowcart.com>

Subject: Questions vs dossier BearPaws BP350

Allo Renaud,

J'ai enfin pu m'asseoir pour revoir le dossier que tu m'as envoyé. Chaque fois que je m'y met depuis la réception du colis, je suis dérangée dans la minute qui suit!

J'ai des questions. Svp m'appeler (Je n'ai pas ton cell).

Voici les questions :

1) Instruction d'installation 314-0020-00-E Rev. G

Tout est beau sauf que j'ai noté qu'on fait référence seulement aux version D et E du pad Streamline.

Il me semble qu'il faudrait ajouter les version A et C aussi dans la Table no 3 du Weight and Balance et la Table no 6 des Tolerances de craques?

Si on garde les infos sur les pads à pockets qui datent du tout début, il me semble qu'on devrait garder aussi les infos pour les pads des autres versions intermédiaires depuis? Suis-je dans le champs?

Si on fait la modif il y aurait la version A et C à ajouter au texte des pages suivantes : 6, 9, 14, 17.

Je m'explique :

Dessin de pad Streamline 112-0002-00-S

Version A (R01) : Pad streamline sans trous (Une dizaine de paires sur le terrain)

Version B (R02) : Pad streamline avec 12 petits trous (jamais fabriqué)

Version C (R03): Pad streamline avec 6 trous (le modèle le plus produit depuis 2008)

Version D : Pad streamline avec 6 trous avec ajustement de tolérances de production du pad. (changement de tolérance fait en 2012)

Version E : Pad streamline avec 6 trous et 7 pockets pour wearshoe bolts de Dart.

Question : Au pire si on ne le fait pas alors les clients des vieux pads je leur envoie les vieilles versions d'instruction d'assemblage si ils me contactent? Ou on pourrait juste faire une lettre addenda pour ajouter cette nuance en cas de besoin?

2) MDL Rev. H

Dans la section des Master Documents en page 2, le dernier document intitulé HTC-TM-0709-001, est toujours en version « NC » alors qu'on indique qu'on l'a changé le 30 mai 2016. Est-ce normal?

Aussi, si je me souviens bien ce document sur la Structural Substantiation ne m'est pas disponible hein? Il est entre vous et TC?

3) Dessin du Pad 314-0018-01-S Rev.E

Pourrais-tu me donner un coup de fil pour m'indiquer toutes les cotes que tu as changé vs les tolérances suite à la discussion avec notre fournisseur de pads? Je voudrais en prendre note à mon dossier de ECO.

4) BP44 Tolérances sur la cartouche de dessin du pad.

On devait aussi changer la cartouche de dessin du Pad de Bearpaw 44. Svp aussi m'indiquer les endroits des cotes changées (il me semble que cela devait être la cartouche) et aussi me dire si tu as changé de version? (J'ai perdu le fil sur ce cas)

J'attends de tes nouvelles dès que possible afin qu'on puisse fermer tout cela!
Merci beaucoup!!

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)

nbarbeau@helitowcart.com

info@helitowcart.com

www.helitowcart.com

Tel: +1.418.561.4512

Fax: +1.418.836.4575

877A Alphonse-Desrochers

St-Nicolas, Levis, Qc

Canada, G7A 5K6

From: Renaud Berthelot-Richer [<mailto:renaudb@ats-ast.com>]

Sent: Tuesday, May 31, 2016 3:02 PM

To: Nathalie Barbeau <nbarbeau@helitowcart.com>

Cc: Jean-Francois Lemire <jeanfrancoisl@ats-ast.com>

Subject: BearPaws BP350

Bonjour Nathalie,

J'ai le plaisir de t'annoncer que je viens de te poster le package des BearPaws. Tu devrais recevoir le tout d'ici quelques jours.

N'hésite-pas à me contacter au besoin.

Renaud
renaud_br@hotmail.com

Nathalie Barbeau

From: Nathalie Barbeau [nbarbeau@helitowcart.com]
Sent: May-21-13 4:12 PM
To: mirkoz@ats-ast.com
Cc: nbarbeau@helitowcart.com
Subject: BearPaws / Demandes diverses vs conformité de documents
Attachments: HTC-EO-0709-002_Rev_A.pdf

Allo Mirko,

Serait-il possible de checker les items suivants? Je suis à faire un méga ménage de mes dossiers et j'ai ces petits items qui ont besoin d'être adressés :

BP350 :

1) HTC-EO-0709-002 rev.A et HTC-MEM-0709-001 rev.A. Je note que je n'ai pas la version signée par toi de ces deux documents. Serait-il possible de signer, scanner et m'envoyer?

2) PADS BP350 GRAVÉS ANCIEN REV : Lorsqu'on a fait une mise à jour des tolérances de production des pads de BP350 Streamline à la fin 2012, le no de produit et sa rév Gravés sur le pad n'ont pas été modifiés sur le dessin du pad pour matcher la rév du dessin. Le pad indique toujours : 314-0018-01-C alors qu'on est rendu à la version D. Ma dernière batch de BP est entièrement faite avec la mention C. Puisque la dernière mise à jour n'était que relative aux tolérances accordées et n'a impliqué aucun changement de paramètre de fabrication je voudrais garder cela simple.

a. Est-ce nécessaire d'avoir la version sur la pièce? Peut-on seulement mettre le no de pièce? (ignorer la version?)

b. Si on doit avoir la révision alors je suggère qu'on change la lettre de rév de gravage sur ton dessin de fabrication (me le faire parvenir en pdf et en format cad), je l'enverrai à notre machiniste pour qu'il fasse la modif pour la prochaine batch à produire.

J'aimerais faire faire la modif sur votre dessin et sur le dessin de développement de notre machiniste sans avoir à faire une nouvelle révision...

on pourrait simplement renommer les fichiers avec « D1 » comme indicatif, sans changer la version officielle et la cartouche? Et surtout sans avoir à changer la réf du dessin de fabrication partout (ie MDL, STC etc)

*on décide d'enlever le no Pièce du Pad mais
garder le no du produit fini. OK / PR*

BP130:

1) Dessing FAO du pad, 314-0024-01-revA : J'ai pas le fichier CAD de ce pad. Svp me le faire parvenir.

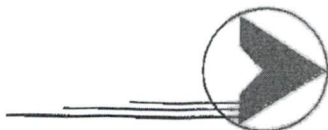
Avoir version finale pad rev "E"

Serait-il possible de me revenir dès cette semaine pendant que je suis dedans?

Merci!!!!

Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis
Quebec, Canada, G7A 5K6
T: +1.418.561.4512
F: +1.418.836.4575
nbarbeau@helitowcart.com



Aviatech Technical Services Inc.

3005 rue Lindbergh
Trois-Rivières, Québec
G9A 5E1

Technical Memorandum

Title: Structural Substantiation - BearPaw Streamline BP350				TM# HTC-MEM-0709-001 Rev_A	
Prepared by: Simon Bernier	Design: Simon Bernier	Mech: N/A	Stress: Simon Bernier	Approved: Mirko Zgela (DAR #310)	Date: July 31, 2008
A/C Effectivity		Registration: N/A		Serial#: N/A	
Reference Documents:					
[1] 314-0020-00 Rev E, BearPaw Model BP350 – Installation Instructions - AS350/355 Series Helicopter, dated Apr 08, 2010 [2] AAC-STR-BP-AS350/355-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP350, dated Nov 20, 2006 [3] 314-0008-01-A, Propriétés de l'UHMW TIVAR, dated May 25, 2006					
Applicable Drawings:					
[1] 112-0002-00-S Rev C, BearPaw BP350 - Assembly Streamline, dated Jul 31, 2008 [2] VNR106 Rev 02, BearPaw BP350 – Pad Streamline, dated Jul 31, 2008					
Background: The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Eurocopter helicopter.					
Description of Change: The new Bearpaw Pad (P/N 314-0018-01 (VNR106-S)) has a new profile is made to ensure that no rocks will get in to the top pocket. Figure 1 shows the original pad (P/N 314-0001-01).					
<p>Figure 1 - BearPaw 350 – Pad</p>					
New configuration: Figure 2 shows the new Bearpaw Pad Streamline (P/N VNR106-S).					

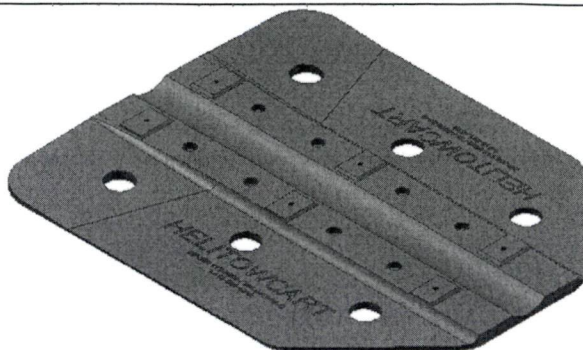
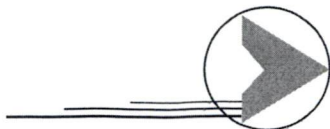


Figure 2 - BearPaw BP350 – Pad Streamline

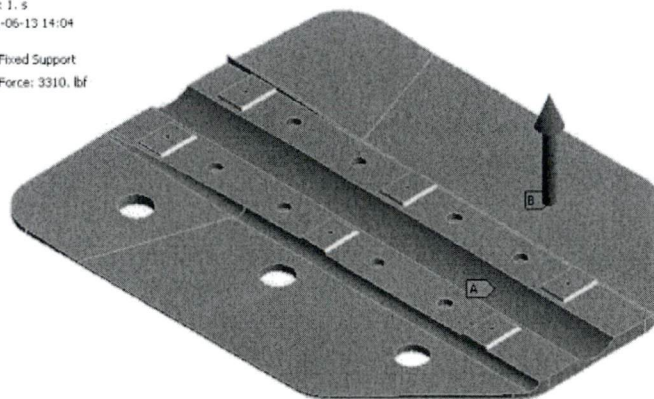
Structural Analysis:

The critical load case is taken from report AAC-STR-BP-AS350/355-1000. Since there are no other parts change in the assembly only the BearPaw Pad needs a new analysis. The analysis is made with Ansys 11.0 Workbench finite element model (FEM) software. Since the attachment hole geometry has not changed the bearing load will not be calculated.

The load (B) of 3310 lbs in the (Y) direction corresponds to the weight of the helicopter equally distributed under the BearPaw. The fixed support (A) Restrain the pad in the six degrees of freedoms. Figure 3 shows the loading condition. The model shows hole on one side only in order to compare the impact of those holes on the stress.

Static Structural
Time: 1. s
2011-06-13 14:04
A Fixed Support
B Force: 3310. lbf

ANSYS
v11



0.000 10.000 (m)
5 mm



Figure 3 - BearPaw – Pad Streamline FEM Model



Aviatech Technical Services Inc.

3005 rue Lindbergh
Trois-Rivières, Québec
G9A 5E1

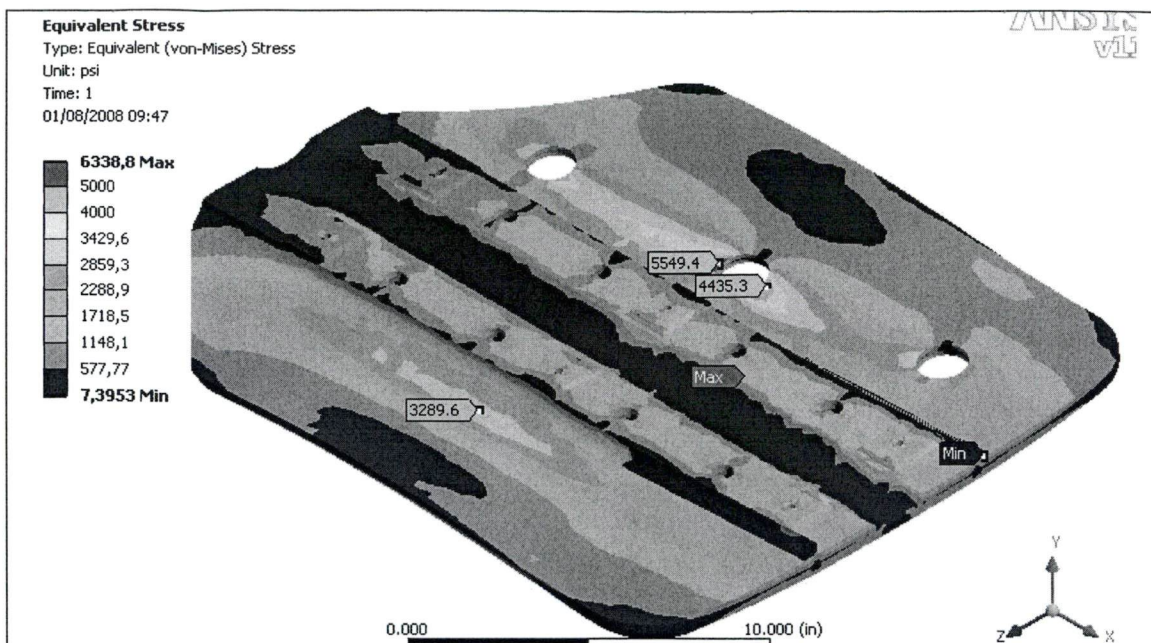


Figure 4 - BearPaw – Pad Streamline Von Mises Stress

The model shows that the Von Mises stress is 5549 Psi near the holes. But 5549 psi is not the reality since the value is located on a edge, if we take a closer look at the hole stress, see Figure 5, the stress is indeed lower 4435 psi.

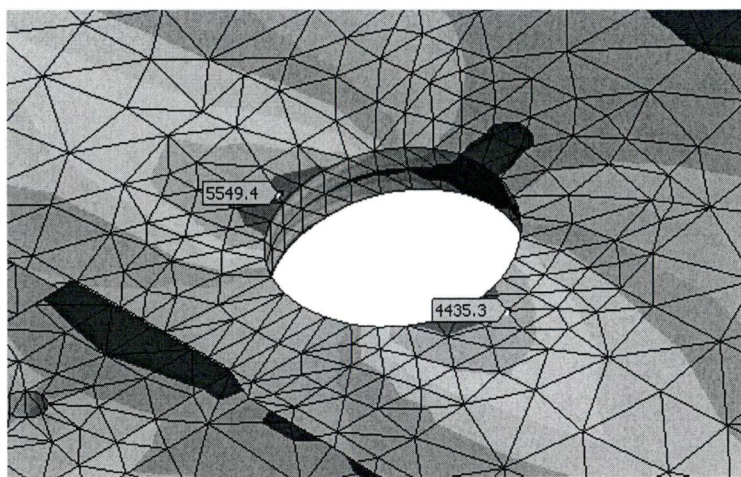


Figure 5 - BearPaw – Pad Streamline Holes Von Mises Stress

As such we have the margin of safety:

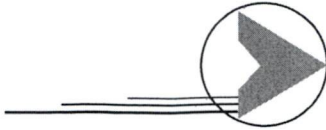
$$MS = (Ftu / (FS \times Fvm)) - 1$$

Where;

Ftu = Material ultimate tensile strength = 6800 psi¹

FS = Factor to ultimate load = 1.5

¹ From 314-0008-01-A, Propriétés de l'UHMW TIVAR, dated May 25, 2006



Aviatech Technical Services Inc.

3005 rue Lindbergh
Trois-Rivières, Québec
G9A 5E1

$F_{vm} = \text{Von Mises maximum stress} = 4435 \text{ psi}$

$MS = 0.1$

Conclusion:

The new BearPaw Pad is indeed structurally acceptable since the margin of safety (MS) is superior to "0".

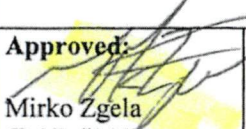
Installation Instructions:

1	Refer to document 314-0020-00 Rev E, BearPaw Model BP350 – Installation Instructions - AS350/355 Series Helicopter, dated Apr 08, 20
---	--



BearPaw Model BP350

Engineering Order

Title: Bear Paw Model BP350 Vent Holes				EO#: HTS-EO-0709-002 Rev A	
Prepared by: Simon Bernier	Design: N/A	Mech: N/A	Stress: N/A	Approved:  Mirko Zgela (DAR #310)	Date: July 31, 2008
A/C Effectivity:	AS 350 D, B, B1, B2, B3 & BA AS 355				
Reference Documents:					
[a]	Drawings: #112-0002-00, BearPaw BP350 – Assembly, Rev C, dated July 31, 2008				
[b]	#VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008				
[c]	# HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev A, dated July 31, 2008				
Reason for change: To reduce the possibility for the BearPaw to stick to the ground while performing landing & take off on muddy terrain.					
Description of change: To create a continuous path for the air, a number of holes are drilled into the Bear Paw pads.					
Previous Configuration: The old configuration was as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev A, dated Feb 29, 2008					
New Configuration: The new configuration of Bear Paw is as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008.					
Structural substantiation: The introduction of the vent holes has a negligible effect on the strength of the BearPaw and is documented in the following memorandum # HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev A, dated July 31, 2008					



BearPaw Model BP350

Rework Instructions:	
1	Drill the hole pattern as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008

Questions à Renaud
Renaud.

Rep. 2016 06 28



- 1) Si client veut machiner
envoyer le dessin stp? Oui
- 2) version dessin pad "c" ? on enlève cette
info dorénavant
de toute façon
- 3) quelles cotes changées au dessin
de Pad (vs tal?)
pas de cotes
changées
Seulement ajout
p.3 pour les
recess!
(la cartouche de tal
était déjà correcte)



Heli-Cushions

by Helitowcart (Vanair inc)

877A Alphonse-Desrochers,

Saint-Nicolas, Levis, Qc,

Canada G7A 5K6

+1.418.561.4512

Made in Canada

<input type="checkbox"/>	DOCUMENTS
<input type="checkbox"/>	CERTIFICATES
<input type="checkbox"/>	TRICOT - ANTHRACITE
<input type="checkbox"/>	VINYL - BLACK / GREY
<input type="checkbox"/>	POLY - TRIVERA
<input type="checkbox"/>	WOOL - BLACK
<input type="checkbox"/>	EMBROIDERY _____

CREW	<input type="checkbox"/>	BACK	<input type="checkbox"/>	SEAT
HC350	<input type="checkbox"/>	STD 27"	<input type="checkbox"/>	STD
BUCKET	<input type="checkbox"/>	SHORT 23"	<input type="checkbox"/>	THIN

HC120	<input type="checkbox"/>	STD 3" THICK	<input type="checkbox"/>	STD 3" THICK
Energy Attenuant	<input type="checkbox"/>	THIN 2"	<input type="checkbox"/>	THIN 2"

REAR	<input type="checkbox"/>	BACK	<input type="checkbox"/>	SEAT
HC350 R4	<input type="checkbox"/>	STD 24"	<input type="checkbox"/>	STD 20"
(INCL. 4 UNITS)	<input type="checkbox"/>	HC350RHR - HEAD RESTS (QTY 4)	<input type="checkbox"/>	SHORT 16"

HC350 RBF	<input type="checkbox"/>	STD 22"	<input type="checkbox"/>	STD 20"
(REAR FLAT BENCH)			<input type="checkbox"/>	SHORT 18"
			<input type="checkbox"/>	X-SHORT 16"

HC120 R3	<input type="checkbox"/>	EC120 REAR LEFT, CENTER & RIGHT
(INCL. 3 UNITS)		htc 273-0003-04-F

www.helitowcart.com



Heli-Cushions

by Helitowcart (Vanair inc)

877A Alphonse-Desrochers,

Saint-Nicolas, Levis, Qc,

Canada G7A 5K6

+1.418.561.4512

Made in Canada

<input type="checkbox"/>	DOCUMENTS
<input type="checkbox"/>	CERTIFICATES
<input type="checkbox"/>	TRICOT - ANTHRACITE
<input type="checkbox"/>	VINYL - BLACK / GREY
<input type="checkbox"/>	POLY - TRIVERA
<input type="checkbox"/>	WOOL - BLACK
<input type="checkbox"/>	EMBROIDERY _____

CREW	<input type="checkbox"/>	BACK	<input type="checkbox"/>	SEAT
HC350	<input type="checkbox"/>	STD 27"	<input type="checkbox"/>	STD
BUCKET	<input type="checkbox"/>	SHORT 23"	<input type="checkbox"/>	THIN

HC120	<input type="checkbox"/>	STD 3" THICK	<input type="checkbox"/>	STD 3" THICK
Energy Attenuant	<input type="checkbox"/>	THIN 2"	<input type="checkbox"/>	THIN 2"

REAR	<input type="checkbox"/>	BACK	<input type="checkbox"/>	SEAT
HC350 R4	<input type="checkbox"/>	STD 24"	<input type="checkbox"/>	STD 20"
(INCL. 4 UNITS)	<input type="checkbox"/>	HC350RHR - HEAD RESTS (QTY 4)	<input type="checkbox"/>	SHORT 16"

HC350 RBF	<input type="checkbox"/>	STD 22"	<input type="checkbox"/>	STD 20"
(REAR FLAT BENCH)			<input type="checkbox"/>	SHORT 18"
			<input type="checkbox"/>	X-SHORT 16"

HC120 R3	<input type="checkbox"/>	EC120 REAR LEFT, CENTER & RIGHT
(INCL. 3 UNITS)		htc 273-0003-04-F

www.helitowcart.com



Heli-Cushions

by Helitowcart (Vanair inc)

877A Alphonse-Desrochers,

Saint-Nicolas, Levis, Qc,

Canada G7A 5K6

+1.418.561.4512

Made in Canada

<input type="checkbox"/>	DOCUMENTS
<input type="checkbox"/>	CERTIFICATES
<input type="checkbox"/>	TRICOT - ANTHRACITE
<input type="checkbox"/>	VINYL - BLACK / GREY
<input type="checkbox"/>	POLY - TRIVERA
<input type="checkbox"/>	WOOL - BLACK
<input type="checkbox"/>	EMBROIDERY _____

CREW	<input type="checkbox"/>	BACK	<input type="checkbox"/>	SEAT
HC350	<input type="checkbox"/>	STD 27"	<input type="checkbox"/>	STD
BUCKET	<input type="checkbox"/>	SHORT 23"	<input type="checkbox"/>	THIN

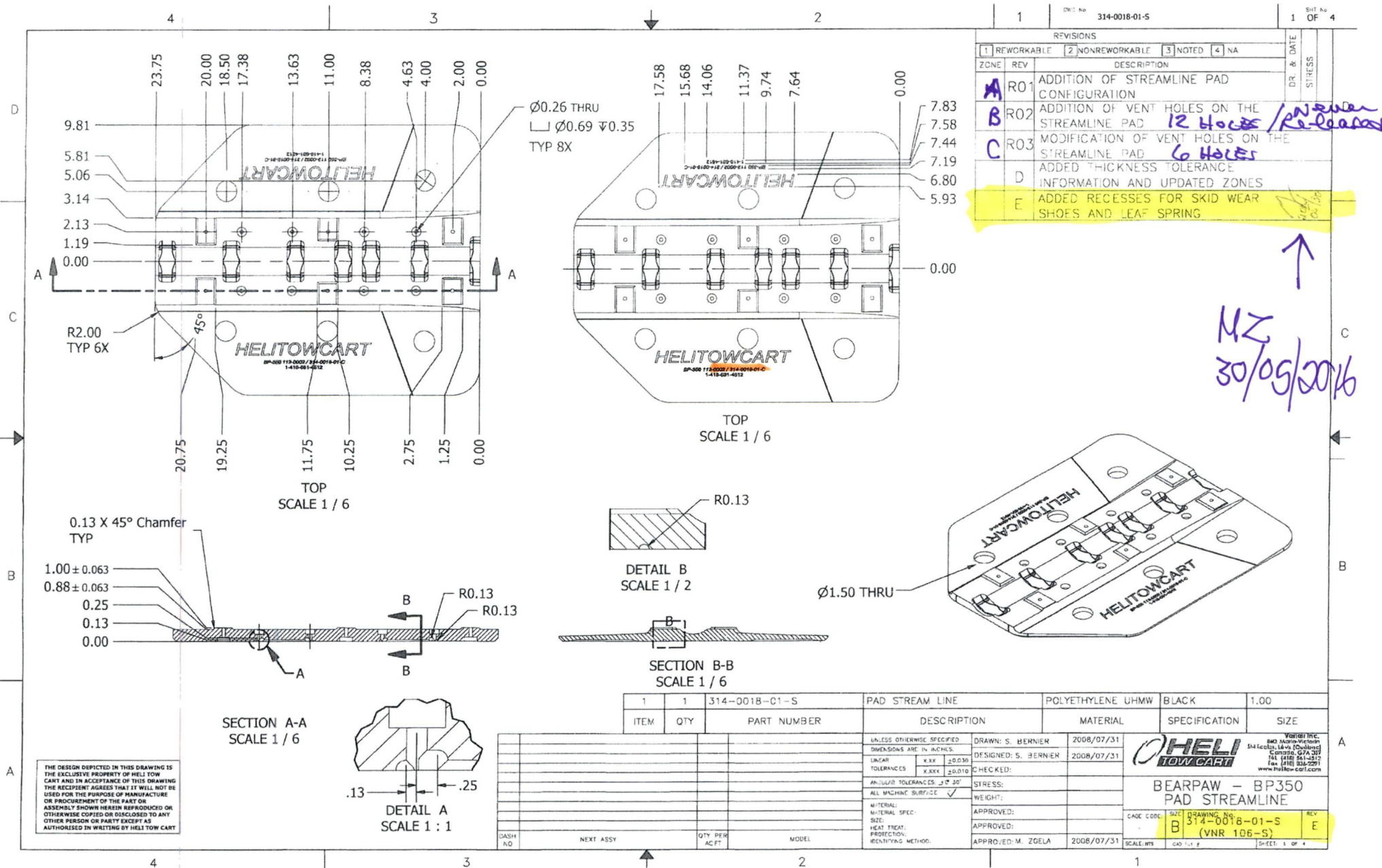
HC120	<input type="checkbox"/>	STD 3" THICK	<input type="checkbox"/>	STD 3" THICK
Energy Attenuant	<input type="checkbox"/>	THIN 2"	<input type="checkbox"/>	THIN 2"


REAR	<input type="checkbox"/>	BACK	<input type="checkbox"/>	SEAT
HC350 R4	<input type="checkbox"/>	STD 24"	<input type="checkbox"/>	STD 20"
(INCL. 4 UNITS)	<input type="checkbox"/>	HC350RHR - HEAD RESTS (QTY 4)	<input type="checkbox"/>	SHORT 16"

HC350 RBF	<input type="checkbox"/>	STD 22"	<input type="checkbox"/>	STD 20"
(REAR FLAT BENCH)			<input type="checkbox"/>	SHORT 18"
			<input type="checkbox"/>	X-SHORT 16"

HC120 R3	<input type="checkbox"/>	EC120 REAR LEFT, CENTER & RIGHT
(INCL. 3 UNITS)		htc 273-0003-04-F

www.helitowcart.com



Pulls cotes
out change? 
of tolerances

4

3

2

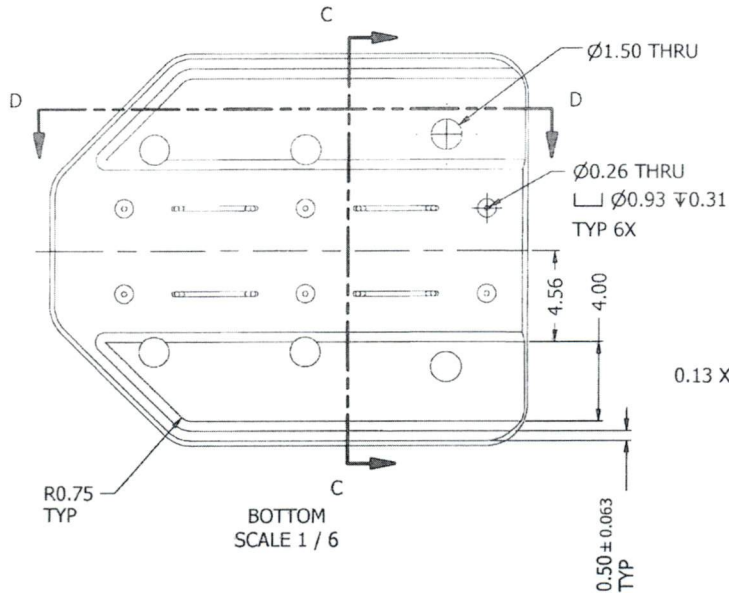
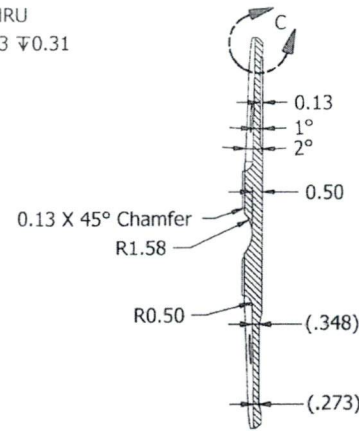
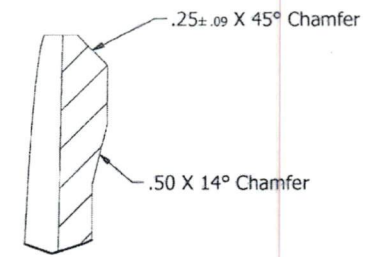
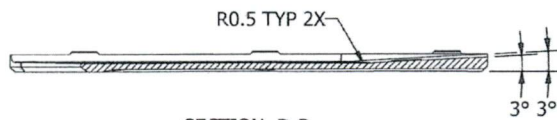
1

DWE No 314-0018-01-S

2 OF 4

REVISIONS

1	REWORKABLE	2	NONREWORKABLE	3	NOTED	4	NA
ZONE	REV	DESCRIPTION				DR. & DATE	STRESS
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION					
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD					
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD					
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES					
	E	ADDED RECESSES FOR SKID WEAR SHOES AND LEAF SPRING					

BOTTOM
SCALE 1 / 6SECTION C-C
SCALE 1 / 6DETAIL C
SCALE 1 : 1SECTION D-D
SCALE 1 / 6

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.				DRAWN: S. BERNIER	2008/07/31
LINES: XXX ±0.030				DESIGNED: S. BERNIER	2008/07/31
TOLERANCES: XXX ±0.010				CHECKED:	
ANGULAR TOLERANCES: ±0.30°				STRESS:	
ALL MACHINE SURFACE: ✓				WEIGHT:	
MATERIAL:				APPROVED:	
MATERIAL SPEC:				APPROVED:	
SIZE:				APPROVED: M. ZGELA	2008/07/31
HEAT TREAT:					
PROTECTION:					
IDENTIFYING METHOD:					
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	DRAWING NO. 314-0018-01-S (VNR 106-S)	
				SCALE: NTS	SHEET: 2 OF 4

HELI TOW CART
Vanderbilt
600 Metro-Victoria
St. Louis, MO 63103
Tel: (314) 661-2512
Fax: (314) 661-2513
www.helitowcart.com

**BEARPAW - BP350
PAD STREAMLINE**

DWG CODE: B
SCALE: NTS
SHEET: 2 OF 4

4

3

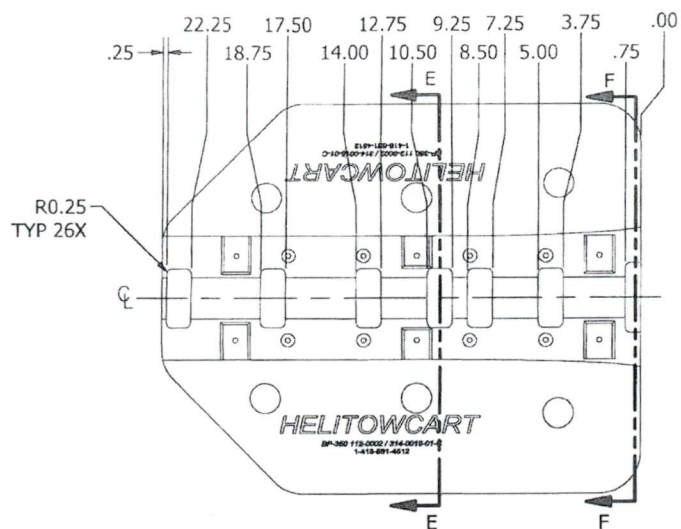
2

1

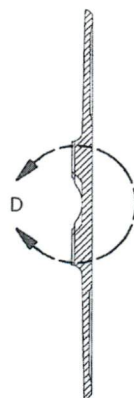
DWG No 314-0018-01-S

3 OF 4

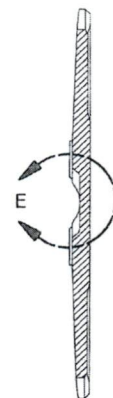
REVISIONS				DR. & DATE	STRESS
1	2	3	4		
ZONE	REV	DESCRIPTION			
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION			
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD			
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD			
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES			
	E	ADDED RECESSES FOR SKID WEAR SHOES AND LEAF SPRING			



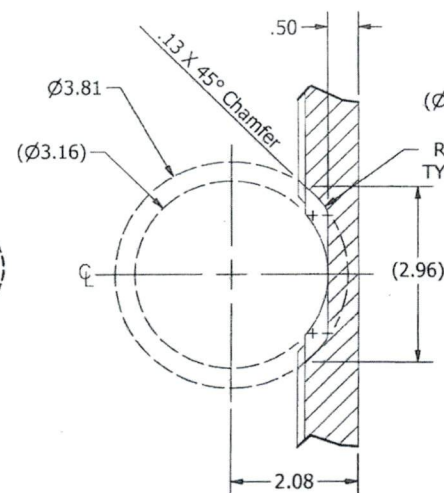
WEAR PAD BOLT CLEARANCES
SCALE 1/6



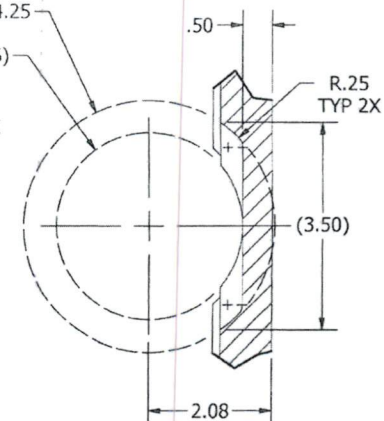
SECTION E-E
SCALE 1/6



SECTION F-F
SCALE 1/6



DETAIL D
SCALE 1/2
TYP 6X



DETAIL E
SCALE 1/2

*Remont-ils
machines sales qtu
j'envoie un stp?*

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.				DRAWN: S.	
LINES: .XXX ±0.025				DESIGNED: S.	
TOLERANCES: .XXX ±0.010				CHECKED:	
ANGULAR TOLERANCES: .10° 30°				STRESS:	
ALL MACHINE SURFACE ✓				WEIGHT:	
MATERIAL: MATERIAL SPEC				APPROVED:	
SIZE:				APPROVED:	
HEAT TREAT:				APPROVED:	
PROTECTION:				APPROVED:	
IDENTIFYING METHOD:				APPROVED: M. ZGELA	2008/07/31
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	SCALE:	CAD FILE #

350

JE

S

RE

E

SHEET 3 OF 4

10

D



THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART



B

Δ

HELIX
TOW CART

Yanagi Inc.
1400, Steeles-Eglinton
St. Regis, Lévis (Québec)
Canada, G7A 3J9
Tel: (418) 361-2512
Fax: (418) 336-2291
www.helixcart.com

BEARPAW - BP350
PAD STREAMLINE

CAGE CODE:	SIZE: B	DRAWING No. 314-0018-01-S (VNR 106-S)	REV: E
SCALE: NTS	CAD FILE #	SHEET: * OF *	

Nathalie Barbeau

From: Nathalie Barbeau <nbarbeau@helitowcart.com>
Sent: 16 May 2016 13:44
To: 'Renaud Berthelot-Richer'
Subject: Terminer Dossier BP350 ECO no 7 & me contacter

Allo Renaud,

Je viens de te laisser un message sommaire sur ta boîte vocale. Voici des infos de plus :

- 1) Je te donne le OK pour terminer le ECO no7 des BP350. On garde notre nom gravé sur les pads etc.
- 2) Svp s'assurer que dans les documents j'ai ce qu'il faut pour que je puisse fournir à Can Heli les dimensions pour qu'ils puissent machiner leurs pads si requis, selon les nouvelles tolérances pour les bolts. Donne-moi un coup de fil à ce sujet.
- 3) Svp s'assurer de terminer ce qu'on a entrepris sur la modif des BP44.
- 4) Serait-il possible de tout compléter pour ce vendredi?

J'attends ton appel!

Merci!

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)

nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Tel: +1.418.561.4512 877A Alphonse-Desrochers
Fax: +1.418.836.4575 St-Nicolas, Levis, Qc
Canada, G7A 5K6

Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: 27 April 2016 14:57
To: Nathalie Barbeau
Subject: BearPaws

Bonjour Nathalie,

J'ai complété tout ce que je pouvais avancer de mon côté, j'attend de tes nouvelles concernant Claude Boule avant d'imprimer la documentation et de la faire approuver par Mirko.

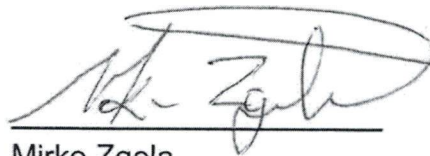
À bientôt!

Renaud

*Version finale tel
qu'approuvé.*
Master Document List
Helitowcart**Eurocopter Model AS 350/355 Series Helicopters
Installation of BearPaw Model BP350**

Report: HTC-MDL-BP-AS350/355-1000 (Rev H)

APPROVED BY:

DATE: MAY 30, 2016

Mirko Zgela

Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
G	December 21, 2012	Updated Tolerance data regarding Pad and Updated referenced document identification and revisions	M.Z.
H	May 30, 2016	Added recesses for skid wear shoes and leaf spring on streamline BearPaw (Dwg # 314-0018-01-S) and allowed trimming/machining of recesses on previous models provided the relief leaves at least 0.500" thickness.	M.Z.

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355/EC130-1000	Compliance Plan – Eurocopter Model AS350/355/EC130 Series Helicopters – Installation of BearPaw Model BP350 and BP130	B	DAR 310	May 11, 2011
HTC-314-0020-00-E	BearPaw Model BP350 – Installation Instruction – AS350/355 Series Helicopters	G	DAR 310	May 30, 2016
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008
HTC-TM-0709-001	Structural Substantiation – BearPaw Streamline BP350 with Recesses Wear Pads	NC	DAR 310	May 30, 2016

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	E	DAR 310	May 30, 2016
314-0002-15 (VNR084)	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
314-0004-15 (VNR085)	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
314-0005-15 (VNR086)	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
314-0007-15 (VNR089)	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
314-0012-01 (VNR099)	Filler Block ¼"	A (R01)	DAR 310	Aug 8, 2006
314-0018-01 (VNR106)	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
314-0018-01-S (VNR106-S)	BearPaw BP350 – Pad Streamline	E	DAR 310	May 30, 2016
314-0019-15 (VNR107)	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006



HTC-MDL-BP-AS350/355-1000

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05	Heat Shrink Specifications	A	N/A	Sept 6, 2006

Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev H)

APPROVED BY:


Mirko Zgela
Design Approval Representative DAR #310

DATE: MAY 30, 2016

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
G	December 21, 2012	Updated Tolerance data regarding Pad and Updated referenced document identification and revisions	M.Z.
H	May 30, 2016	Added recesses for skid wear shoes and leaf spring on streamline BearPaw (Dwg # 314-0018-01-S) and allowed trimming/machining of recesses on previous models provided the relief leaves at least 0.500" thickness.	M.Z.

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355/EC130-1000	Compliance Plan – Eurocopter Model AS350/355/EC130 Series Helicopters – Installation of BearPaw Model BP350 and BP130	B	DAR 310	May 11, 2011
② HTC-314-0020-00-E	BearPaw Model BP350 – Installation Instruction – AS350/355 Series Helicopters	G	DAR 310	May 30, 2016
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008
③ HTC-TM-0709-001	Structural Substantiation – BearPaw Streamline BP350 with Recesses Wear Pads	NC	DAR 310	May 30, 2016

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
④ 112-0002-00-S	BearPaw BP350 – Assembly Streamline	E	DAR 310	May 30, 2016
314-0002-15 (VNR084)	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
314-0004-15 (VNR085)	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
314-0005-15 (VNR086)	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
314-0007-15 (VNR089)	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
314-0012-01 (VNR099)	Filler Block 1/4"	A (R01)	DAR 310	Aug 8, 2006
314-0018-01 (VNR106)	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
⑤ 314-0018-01-S (VNR106-S)	BearPaw BP350 – Pad Streamline	E	DAR 310	May 30, 2016
314-0019-15 (VNR107)	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05	Heat Shrink Specifications	A	N/A	Sept 6, 2006

Version finale approuvée
2016 06 22 *NR*

TABLE OF CONTENTS:

INTRODUCTION

Scope
General
Helicopter Effectivity
Installer Responsibilities

p.2
p.2
p.2
p.2
p.3

INSTALLATION

BearPaw Installation
BearPaw Removal
Weight & Balance
Parts List

p.4
p.4
p.6
p.6
p.7

INSPECTION

Life Limited Items
Pre-Flight
Periodic Inspection Schedule
500 Hour or Yearly Inspection Details
Overhaul Requirements
Pad Recesses for Skid Wear Shoes and Leaf Spring

p.8
p.8
p.8
p.8
p.8
p.10
p.10

REVISIONS & APPROVAL

p.11

Annex A (BearPaw Assembly Drawing)
Annex B (Tolerance Zones for Cracks and Wear)

Version FINALE

*314-Inst-Inst
ICA*

D. Barbeau *2016 06 22*

Page 1 of 18

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION**BearPaw Installation**

Reference Documentation:

[1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

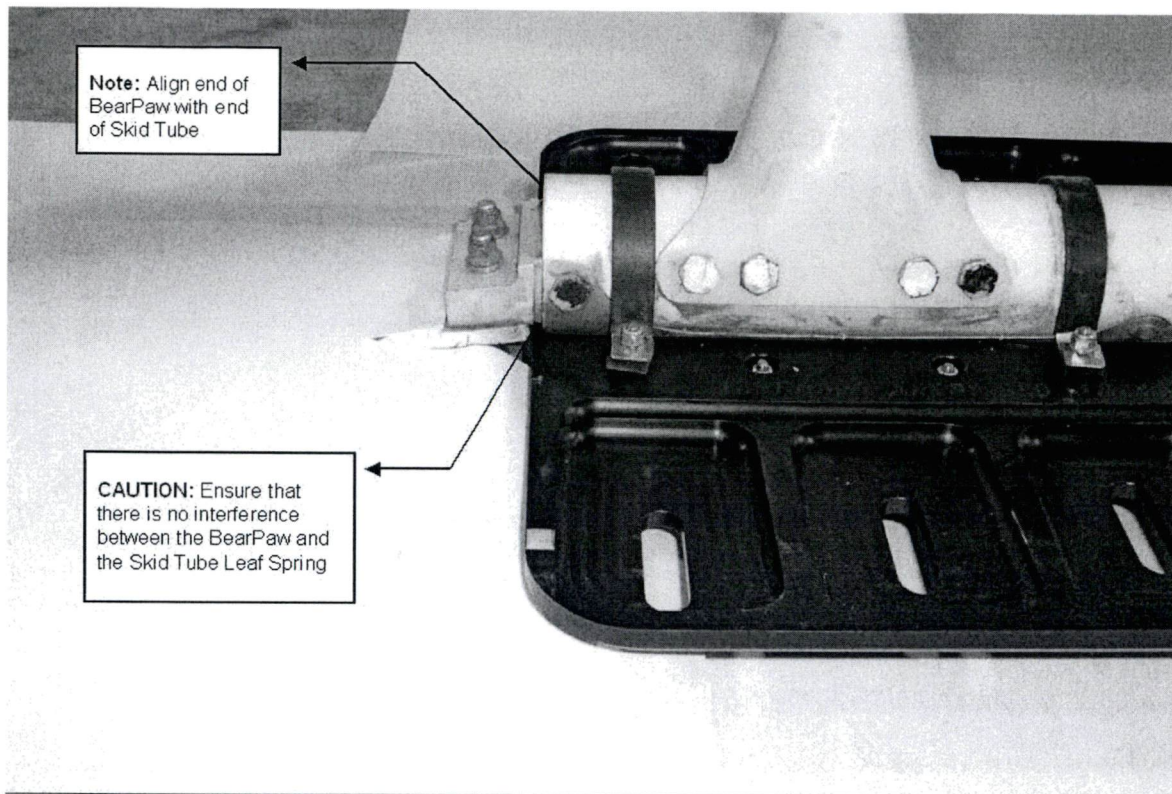


Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid

BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N314-0012-01), and remove BearPaw pad (P/N 314-0018-01) or (P/N 314-0018-01-S Streamline);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data ⁽¹⁾

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kg
Helitowcart BearPaw Model BP350 - <u>Streamline</u> (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kg

Notes:

(1) Weight and moment provided are for full kit installation (two BearPaw assemblies).

Parts Lists

The Helitowcart BearPaw detailed parts list is as follows.

Table 4 – Part List (one BearPaw)

Description	Qty	Part / Dwg No.	Additional Drawing Reference No./ Name
BearPaw Assembly Model BP350	1	112-0002-00 or 112-0002-00-S	BearPaw Assembly – Pocket Style, or Bear Paw Assembly – Streamline
BearPaw Pad ⁽¹⁾ Model BP350	1	314-0018-01 or 314-0018-01-S	BearPaw BP350 – Pocket Style Pad (VNR106) or BearPaw BP350 – Streamline Pad (VNR106-S)
U Shaped Clips	3	314-0019-15	BearPaw BP350 - U Shaped Clips (VNR107)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks 1/4"	6	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	IceBlade Assembly (VNR086)
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use pocked shaped BearPaw Pad P/N 314-0018-01 for assembly P/N 112-0002-00. Use streamlined Pad P/N 314-0018-01-S for assembly P/N 112-0002-00-S as applicable.

Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: Thursday, June 23, 2016 8:10 AM
To: Nathalie Barbeau
Subject: RE: Package client

Salut Nathalie,

- A) Suite à notre discussion verbale, nous avons décidé toi et moi de graver le numéro du produit et non du pad sur le pad, à moins que j'aie mal compris. Il faut que le numéro du produit apparaisse à quelque part, ce n'est pas nécessaire pour le pad.
B) Oui c'est normal, le TM est un document de certification auprès de Transport Canada qui n'est pas requis pour effectuer l'installation.

Renaud

De : Nathalie Barbeau [mailto:nbarbeau@helitowcart.com]
Envoyé : 2016/06/22 18:01
À : Renaud Berthelot-Richer
Objet : RE: Package client

Allo Renaud,
Je passe sur le dossier.
2 questions :

- A) Je comprends qu'après consultation avec Mirko le choix a été fait de graver seulement le P/N du produit fini sur le pad et non le no du pad lui-même? Svp juste me confirmer que c'est bien ce qui était voulu (c'est le contraire de notre dernière conversation écrite et donc je veux m'assurer que c'est volontaire).
B) C'est normal que je n'ai pas le document TM? Svp juste me confirmer que c'est bien ce qui est désiré.

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)

nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Tel: +1.418.561.4512 877A Alphonse-Desrochers
Fax: +1.418.836.4575 St-Nicolas, Lévis, Qc
Canada, G7A 5K6

From: Renaud Berthelot-Richer [mailto:renaudb@ats-ast.com]
Sent: Tuesday, June 21, 2016 1:44 PM
To: Nathalie Barbeau <nbarbeau@helitowcart.com>
Subject: Package client

Bonjour Nathalie,

Tu trouveras toute la documentation à jour au lien dropbox ci-dessous. À noter que suite à ma discussion avec Mirko, une inspection de 600 h ou 1 an a été acceptée, mais pas 2 ans.

<https://www.dropbox.com/sh/kue6e70m7pj752t/AACuHIUn0MRzZKOXxHubpLma?dl=0>

Renaud

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to Tables 5 & 6 and Annex B – Tolerances for cracks & wear

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 600 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 600 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

600 Hours or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See Tables 5 & 6 and Annex B – Tolerances for cracks & wear.
- Replace all parts damaged beyond tolerances.

2016 06 11

Mirko a accepté
600 h mais exige aux
1 an let non aux 2 ans tel
qu'avait demandé Simon Ebacher
(de Can. heli)

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Pockets</u> : Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	0,050	<u>Stiffeners</u> : NO cracks in stiffeners.

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000; and 0,88	0,250	
C	0.273 to 0,348 (variable thickness)	0,075	Cracks are acceptable in zone C under the Helitowcart BearPaw to a maximum length of 0,5". Stop drill cracks with a 0,125" hole.
D	0,49 (thickness after radius)	0,075	No cracks in the radius
E	0,38	0,075	No cracks in the BearPaw contour

Pad Recesses for Skid Wear Shoes and Leaf Spring

BearPaw 314-0018-01-S may be trimmed/machined to clear wear shoe mounting screws and skid leaf spring provided the recesses leave at least 0.500" thickness and provided that maximum lengths and widths of Figure 2 are not exceeded.

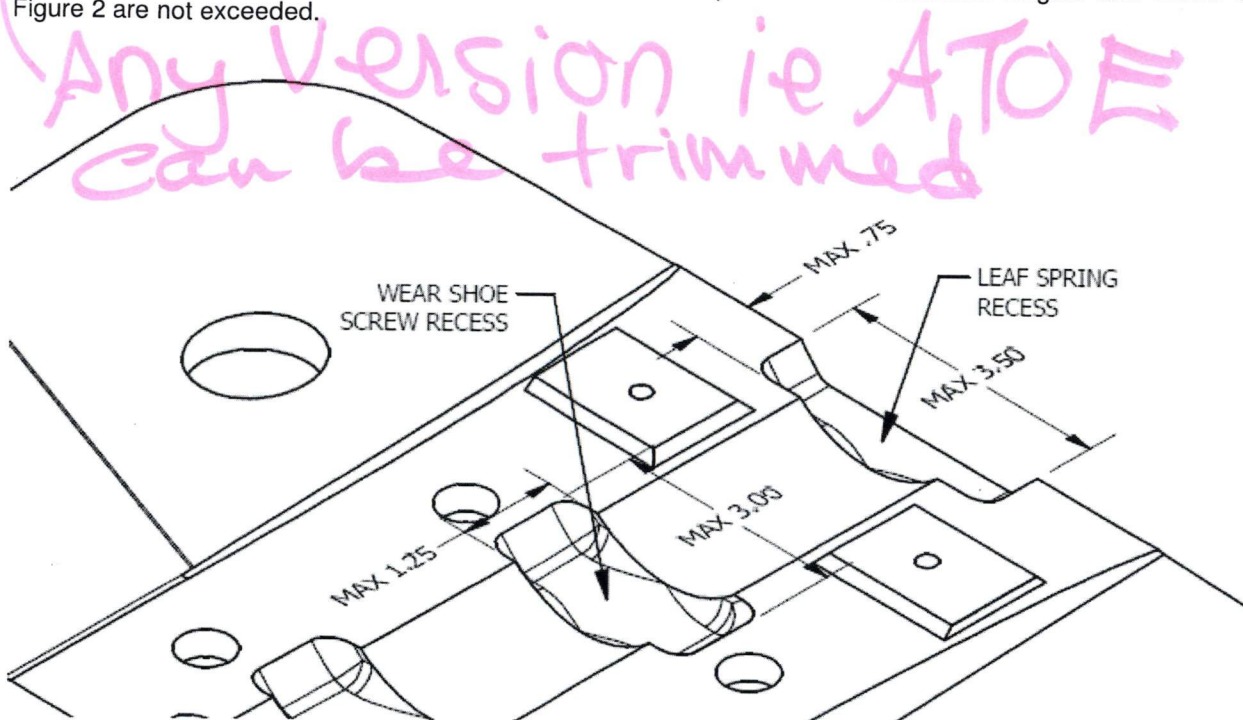


Figure 2 – Maximum Dimensions of Recesses

Overhaul Requirements


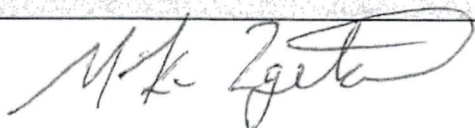
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to C of G data
December 21, 2012	F	Updated Pad Tolerances and Document identifications . Improved page set up for reader convenience.
April 29, 2016	G	Added recesses for skid wear shoes and leaf spring on streamline BearPaw and allowed trimming/machining of recesses on previous models provided the relief leaves at least 0.500" thickness.

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Date: May 30, 2016
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	Date: May 30, 2016

Annex A – BearPaw Assembly Drawing

See: BearPaw Assembly, dwg no. (112-0002-00) for Pocket style pad or;
 BearPaw Assembly, dwg no. (112-0002-00-S) for Streamline pad

Annex B – Tolerance Zones for Cracks and Wear

See: BearPaw Pad, dwg no. 314-0018-01 (VNR106) for Pocket style pad;
 BearPaw Pad, dwg no. 314-0018-01-S (VNR106-S) Rev A to D for Streamline pad without recess;
 BearPaw Pad, dwg no. 314-0018-01-S (VNR106-S) Rev E for Streamline pad with recesses.

Annex A – BearPaw Assembly Drawing

Pocket Style Pad – Dwg 112-0002-00

No.	Qty.	Description	Part #	Rev #
1		Bearpaw BP-350 - Pad	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-1S	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Slotted clip support	314-0007-1S	B
5	6	Bearpaw - Filter Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-1S	A
7	6	Bolt AN4-14A	261-0001-17	A
8	20	Washer AN80-416	263-0001-17	A
9	14	Nut MS20365-428	262-0001-17	A

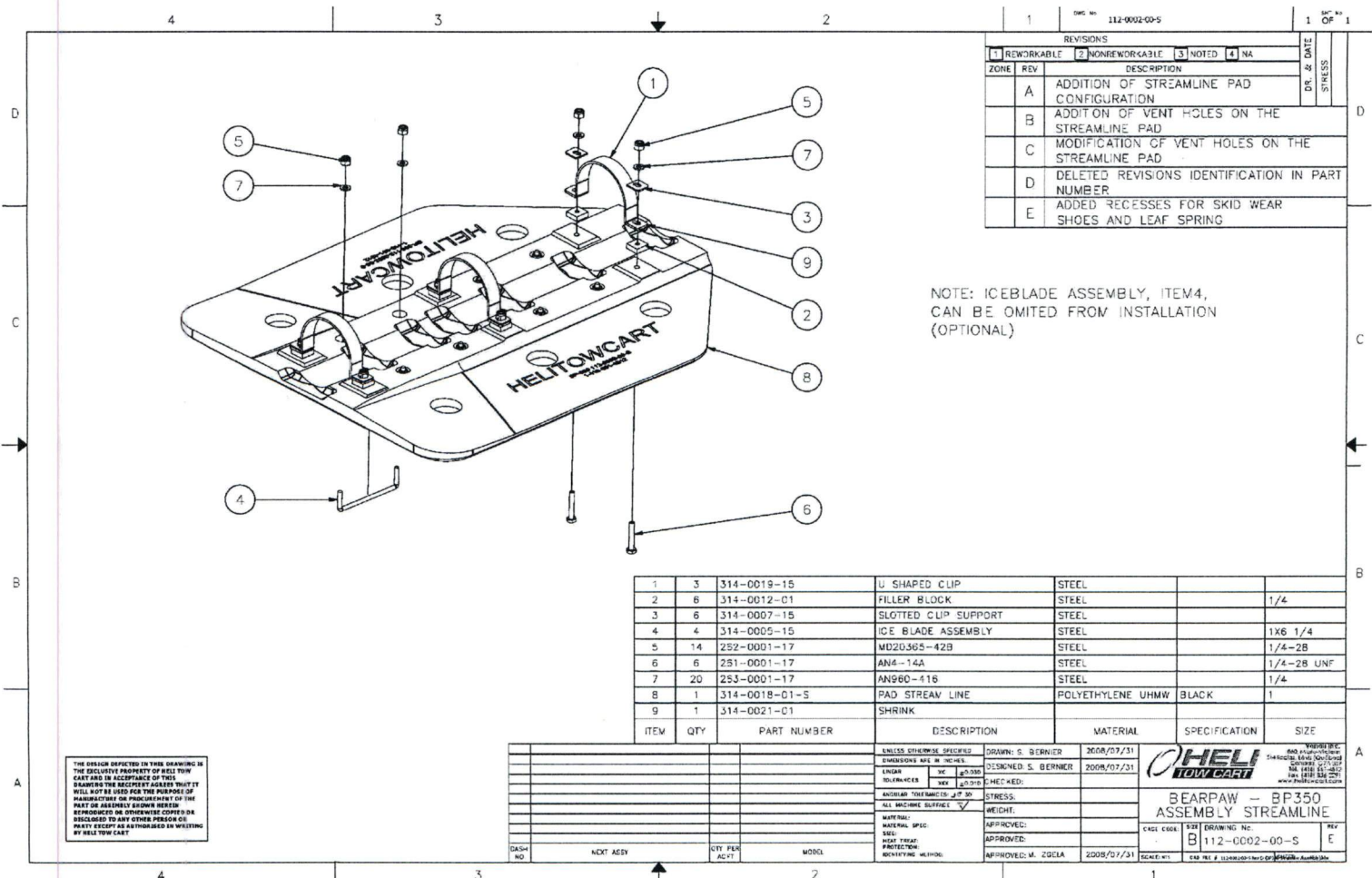
314-0021-01-A Qty: 3 (Shrink)
262-0001-17-A Qty: 14
263-0001-17-A Qty: 20
314-0007-1S-B Qty: 6
314-0019-1S-A Qty: 3 (U Shaped Clip)
314-0012-01-A Qty: 6
314-0018-01-B Qty: 1
263-0001-17-A
261-0001-17-A Qty: 6
314-0005-1S-A Qty: 4

Note : Iceblade assembly can be omitted from installation (Optional)

Vendor Inc.
8801 St-Jacques
St-Hubert, QC J3T 2K2
Canada (514) 882-2291
Fax: (514) 882-2292
E-mail: info@helitowcart.com
www.helitowcart.com

REVISIONS	
NO.	DESCRIPTION
1	112-0002-00

Streamline Pad – Dwg 112-0002-00-S



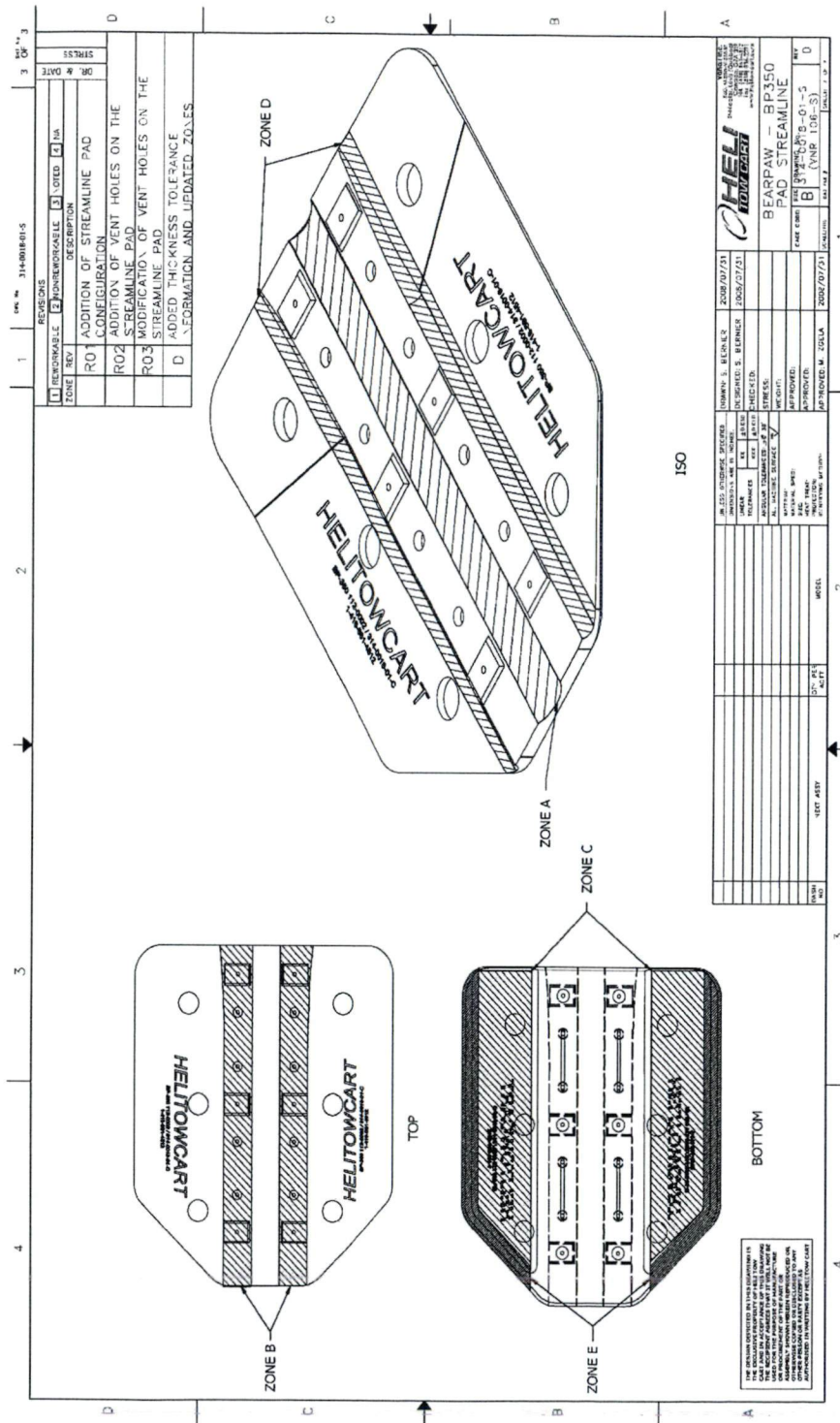
Annex B – Tolerance Zones for Cracks and Wear



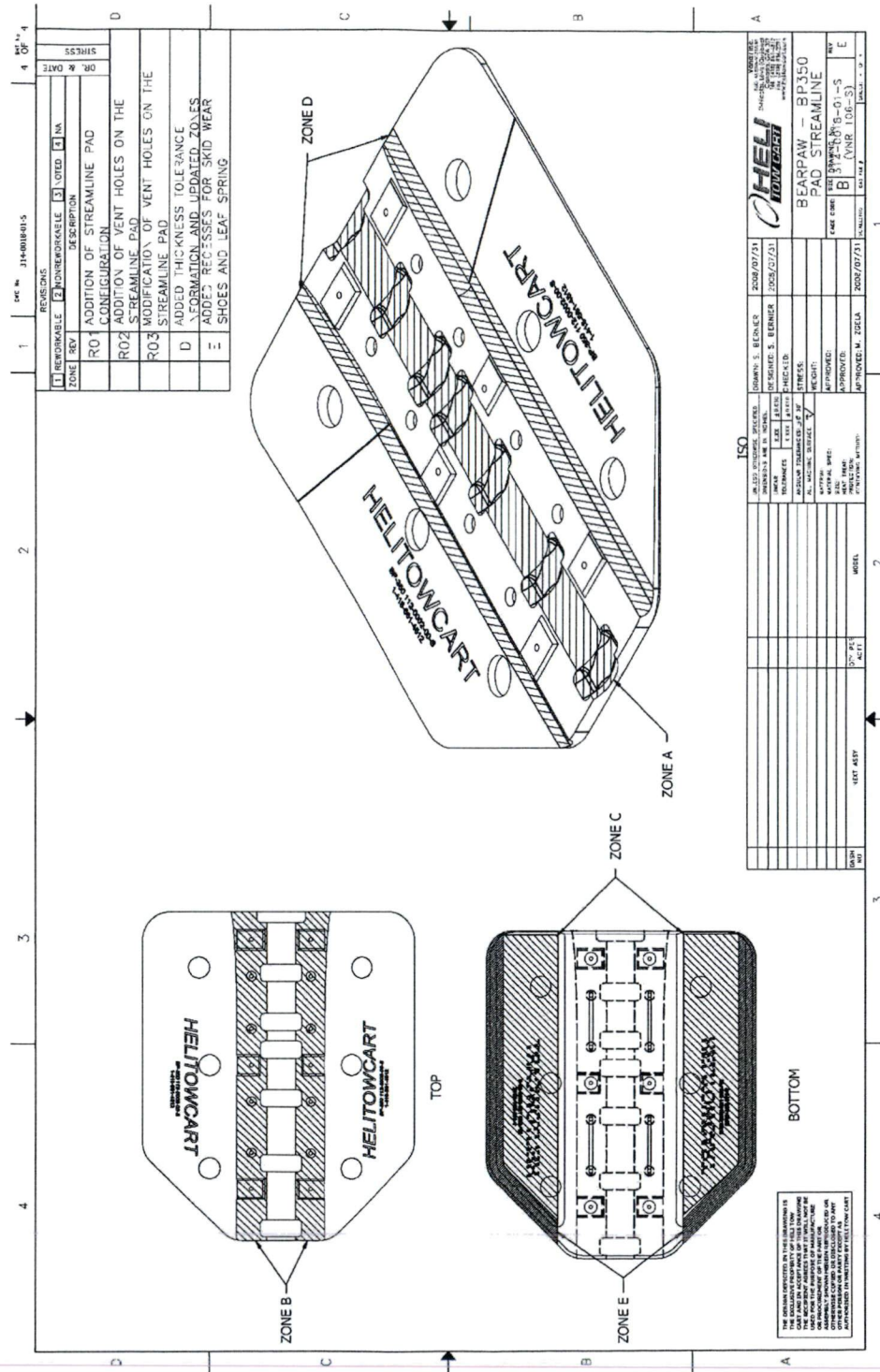
Pocket Style Pad – Dwg 314-0018-01 (VNR106) Page 2 of 2



Streamline Pad w/o Recesses – Dwg 314-0018-01 (VNR106-S) Rev A to D



Streamline Pad with Recesses – Dwg 314-0018-01 (VNR106-S) Rev E



Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: Tuesday, June 21, 2016 1:44 PM
To: Nathalie Barbeau
Subject: Package client

Flag Status: Flagged

Bonjour Nathalie,

Tu trouveras toute la documentation à jour au lien dropbox ci-dessous. À noter que suite à ma discussion avec Mirko, une inspection de 600 h ou 1 an a été acceptée, mais pas 2 ans.

<https://www.dropbox.com/sh/kue6e70m7pj752t/AACuHIUun0MRzZKOXxHubpLma?dl=0>

Renaud

CHAPTER 5 – INSPECTION REQUIREMENTS (05-00-00)**5.1 DAILY CHECK**

- 5.1.1 Check the D350-578-XXX Bearpaw and Wearplate installations (if installed) for damage and excessive wear. If damage or excessive wear is found, perform the detailed 600 hour inspection described in Chapter 5.2.

5.2 600 HOUR INSPECTION

TO BE PERFORMED EVERY 600 HOURS OR IF DAMAGE FOUND ON DAILY CHECK.

Note: For the convenience of scheduling maintenance, the tolerance for scheduled inspection intervals is +/-10% (+/- 60 hours). In each case, the subsequent interval will be adjusted to re-establish the original schedule. When an inspection is done more than 10% early, subsequent inspections will be advanced as required not to exceed the maximum tolerance.

- 5.2.1 Remove the Bearpaws and wearplates per Chapter 32 of these instructions and inspect the bearpaws, clamps, and wearplates as applicable for damage and/or wear.
- 5.2.2 In the shaded region of Figure 5-2, the Bearpaw may be worn by a maximum of 0.125" (3.18mm) down to the minimum allowable values specified in Table 5-1. Outside the shaded region of Figure 5-2, (i.e. in the pockets) it is acceptable to have worn areas up to a maximum of 0.125" (3.18mm) deep over a maximum area of 2 sq. in (1290 sq. mm). The edge of one damaged region must be a minimum of 2" (51mm) away from the edge of next nearest damaged region.

Table 5-1: Bearpaw Damage Limits

Dimension	Nominal Thickness	Max. Allowable Wear	Min. Allowable Dimension
A	0.375 in 9.53 mm	0.125 in 3.18 mm	0.250 in 6.35 mm
B	0.750 in 19.05 mm	0.125 in 3.18 mm	0.625 in 15.88 mm
C	0.950 in 24.13 mm	0.125 in 3.18 mm	0.825 in 20.96 mm

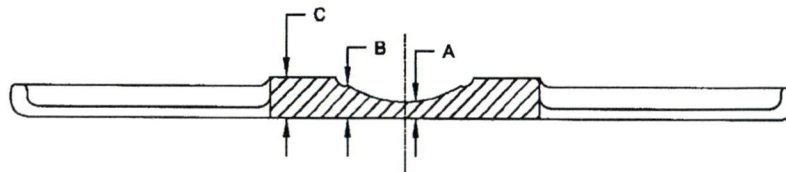


Figure 5-2: Damage Limit Diagram

- 5.2.3 Check the D3859-041 Wearplate for excessive wear/damage. If the hardcoat weld beads have been worn down, they may be built back up to 0.06" (1.5mm) to 0.13" (3.4mm) by TIG welding per AMS-STD-2219 using 2059B Hard Coat welding rod. Cracks in the Wearplates can be repaired by TIG welding per AMS-STD-2219 using ER316L or ER308L filler rod. The Wearplates must be replaced if they have been worn through to the bearpaw surface.
- 5.2.4 Inspect the D2438 (old design) or D4011-1 (new design) Clamps for cracks and hole elongation. If cracks are detected, replace clamps immediately per Chapter 32 of these

2016 06 22

REQUEST FROM CUSTOMERS
TO CHANGE THE 500 HOURS
INTERVAL TO THE NEW 600
SPECIFIED FOR REGULAR
MAINTENANCE OF THE
HEUIS.

THIS IS DATA FOR THAT REQ.

MIRKO AUTHORIZED
600 HOURS BUT ONLY
ON 1 YEAR, NOT 2
YEARS INTERVALS

instructions. If the holes are elongated more than 0.025" (0.63 mm), replace clamps per Chapter 32 of these instructions.

- 5.2.5 Inspect the D2182B050 (old design) D4012-1 (new design) Cushions for wear and deterioration and suitability for continued service.
- 5.2.6 Cracks are acceptable in the unshaded portion of Figure 5-2 as long as they are restricted to the pockets of the Bearpaws. Cracks that penetrate the stiffening ribs of the unshaded regions are unacceptable. Stop drill all cracks up to 0.50" (12.7mm) long with Ø0.188" (Ø4.78mm) drill.
- 5.2.7 Report all damage in excess of indicated limits to Dart Aerospace Ltd. for evaluation and disposition.
- 5.2.8 Replace damaged or worn parts per Chapter 32 of these instructions.
- 5.2.9 The Bearpaws should be re-installed per Chapter 32 of these instructions.

5.3 OVERHAUL REQUIREMENTS

NO COMPONENT OVERHAUL REQUIRED FOR THIS DESIGN CHANGE.

CHAPTER 32 – LANDING GEAR (32-00-00)

32.1 BEARPAW/WEARPLATE REMOVAL

To remove the Dart Bearpaws/Wearplates from the AS 350/355 landing gear:

- 32.1.1 Jack up the aircraft.
- 32.1.2 Loosen the clamp bolts and remove the bearpaws, wearplates (if installed) and clamps. Ensure the skidtubes are serviceable.
- 32.1.3 If the Bearpaws were installed on Dart Skidtubes and are being removed from operation re-install the D3537-1 or D2648-1 Wearpads as applicable
- 32.1.4 Lower the aircraft.

32.2 BEARPAW RE-INSTALLATION

To re-install the Dart Bearpaws on the AS 350/355 landing gear:

- 32.2.1 Jack up the aircraft.
- 32.2.2 If the Bearpaws are being installed on Dart Skidtubes remove the D3537-1 or D2648-1 Wearpads prior to installing the Bearpaws. Re-install attachment hardware into open inserts.
NOTE: It is not necessary to remove the Dart Wearplates and gaskets.
- 32.2.3 For compatibility with some kits, it is acceptable to relocate the center clamp as shown in Figure 32-7.
- 32.2.4 Position D2432F/-3 (D350-578-011/-015) or D2672F (D350-578-021) or D4297-1/-3 (D350-578-013/-017) Bearpaw on the aft end of each skidtube as shown in Figure 32-1 or Figure 32-2.
- 32.2.5 The D2432F/-3 or D2672F or D4297-1/-3 Bearpaw may be relieved to clear wearshoe mounting screws provided the relief leaves 0.375" (9.53mm) thickness.
- 32.2.6 Install the D4011-1 clamps with the hardware as shown in Figure 32-3 or Figure 32-4.
NOTE: Additional NAS1149D0463J washers may be installed under the nuts to ensure 1.5-4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN4-16A/-17A bolts with longer or shorter AN4 bolts, if required.
CAUTION: The torque on the nuts should be limited to 20 in-lb (2.3 Nm).
- 32.2.7 Lower the aircraft.

32.3 BEARPAW/WEARPLATE RE-INSTALLATION

To re-install the Dart Bearpaws/Wearplates on the AS 350/355 landing gear:

- 32.3.1 Jack up the aircraft.
- 32.3.2 If the Bearpaws are being installed on Dart Skidtubes remove the D3537-1 or D2648-1 Wearpads prior to installing the Bearpaws. Re-install attachment hardware into open inserts.
NOTE: It is not necessary to remove the Dart Wearplates and gaskets.

- 32.3.3 For compatibility with some kits, it is acceptable to relocate the center clamp as shown in Figure 32-7.
- 32.3.4 Align the D3859-041 Wearplates with the holes in the bottom of the bearpaw. Position D2432F/-3 (D350-578-111/-115) or D2672F (D350-578-121) or D4297-1/-3 (D350-578-113/-117) Bearpaw on the aft end of each skidtube as shown in Figure 32-1 or Figure 32-2.
- 32.3.5 The D2432F/-3 or D2672F or D4297-1/-3 Bearpaw may be relieved to clear wearshoe mounting screws provided the relief leaves 0.375" (9.53mm) thickness.
- 32.3.6 Lower the aircraft.
- 32.3.7 Install the D4011-1 clamps with the hardware as shown in Figure 32-5 and 32-6.
NOTE: Additional NAS1149D0463J washers may be installed under the nuts to ensure 1.5-4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN4-16A/-17A bolts with longer or shorter AN4 bolts, if required.
CAUTION: The torque on the nuts should be limited to 20 in-lb (2.3 Nm).

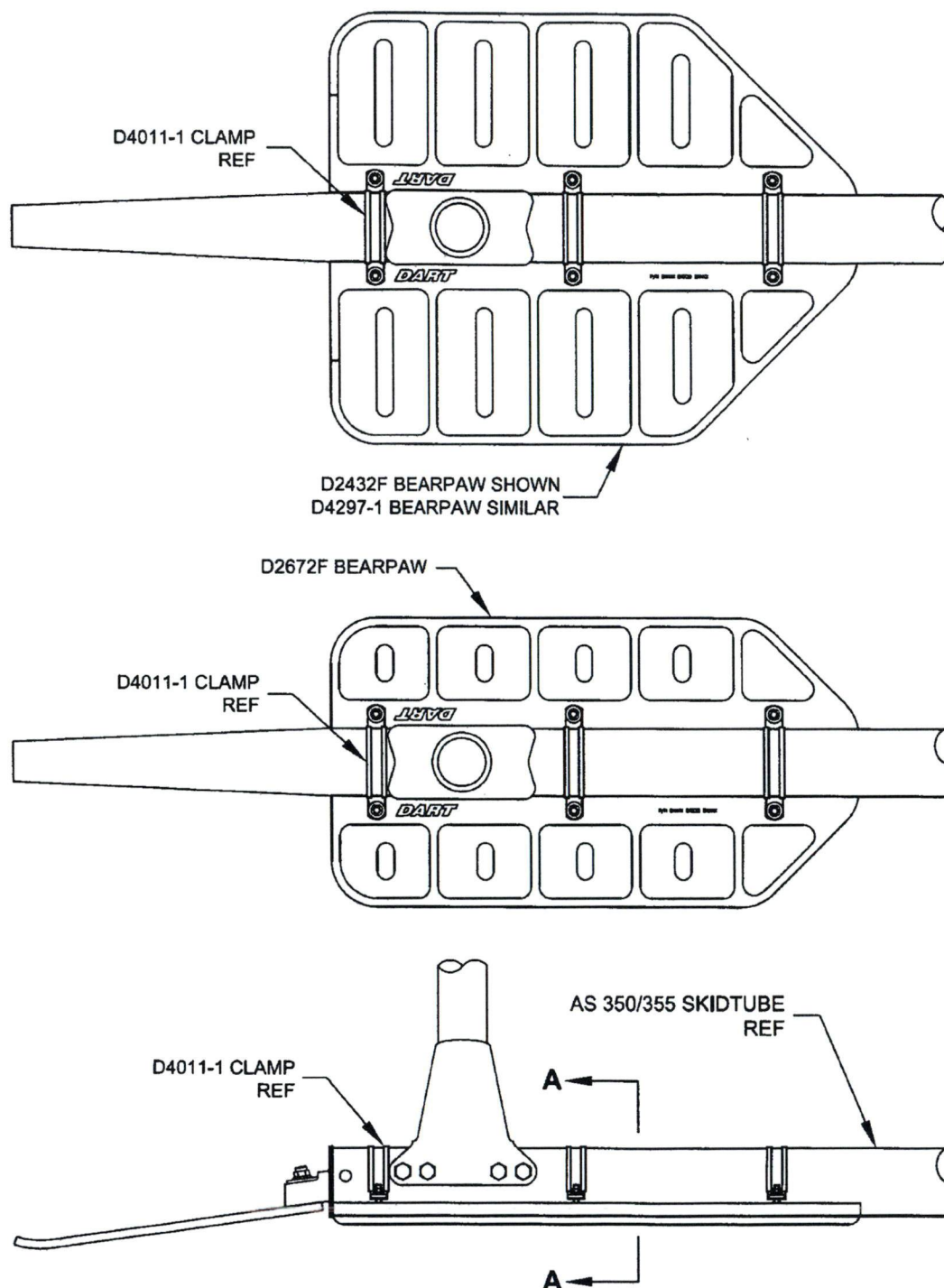


Figure 32-1: D350-578-011/-013/-021 Bearpaw Installation

• COPYRIGHT © 2002 BY DART AEROSPACE LTD. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3

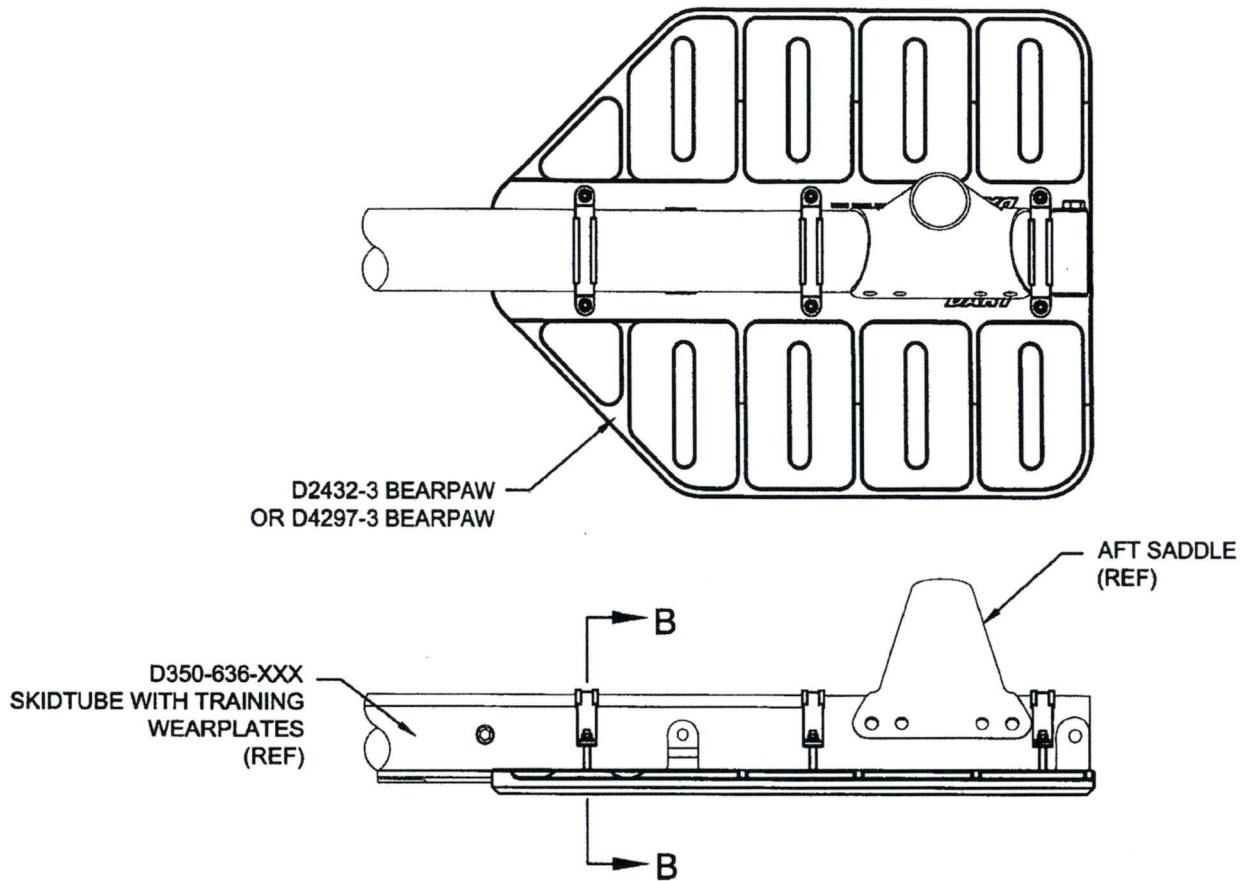
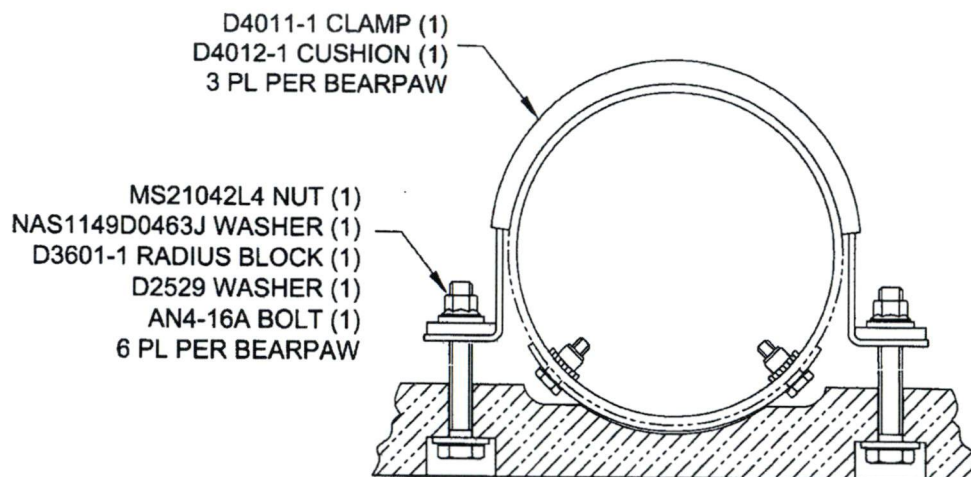
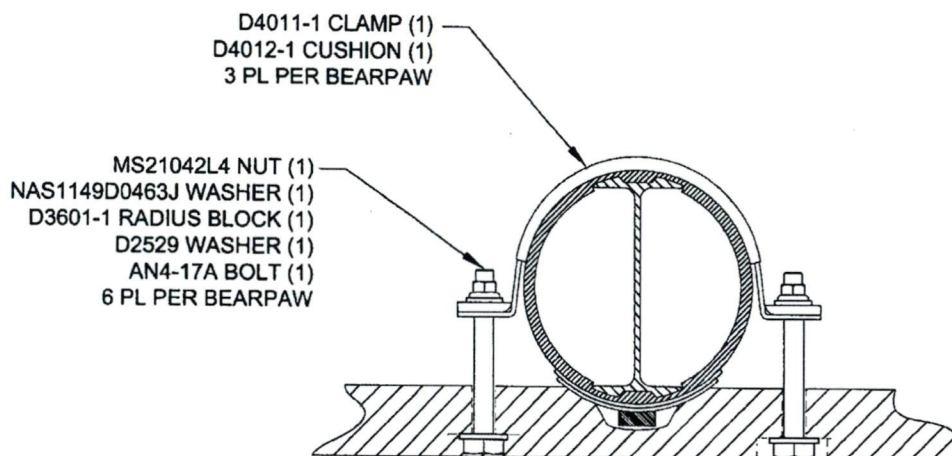


Figure 32-2: D350-578-015/-017 Bearpaw Installations



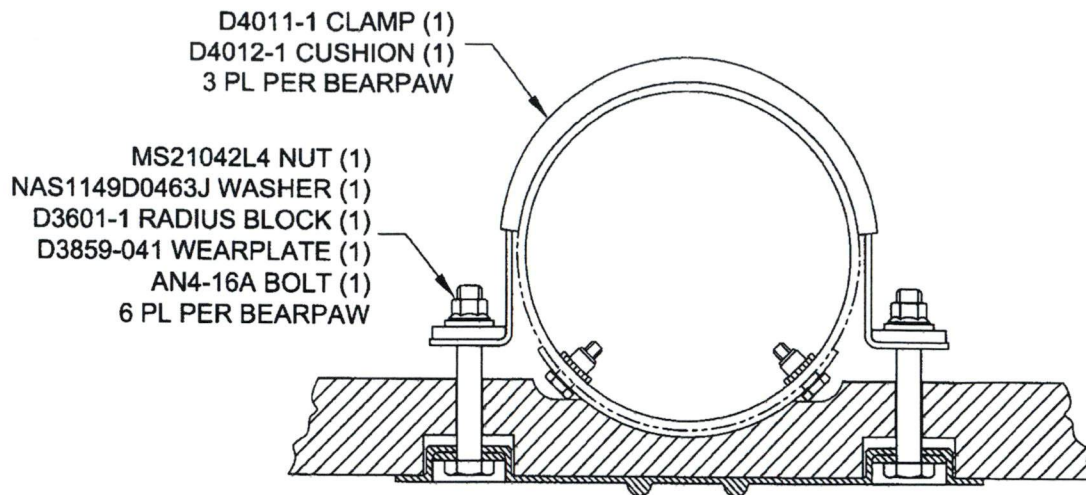
Section A-A

Figure 32-3: Clamping Detail (-011/-013/-021)



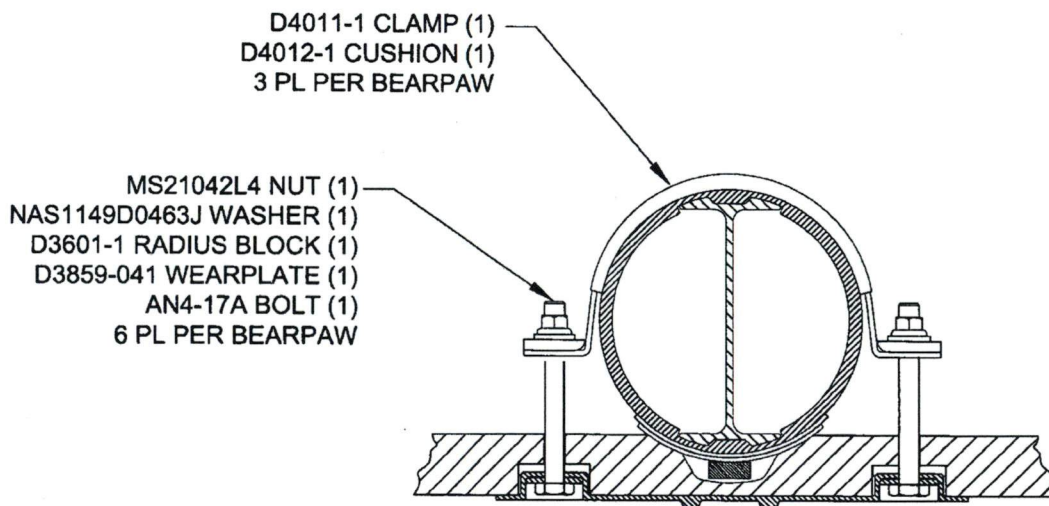
Section B-B

Figure 32-4: Clamping Detail (-015/-017)



Section A-A

Figure 32-5: Clamping Detail (-031/-111/-113/-121)



Section B-B

Figure 32-6: Clamping Detail (-031/-115/-117)

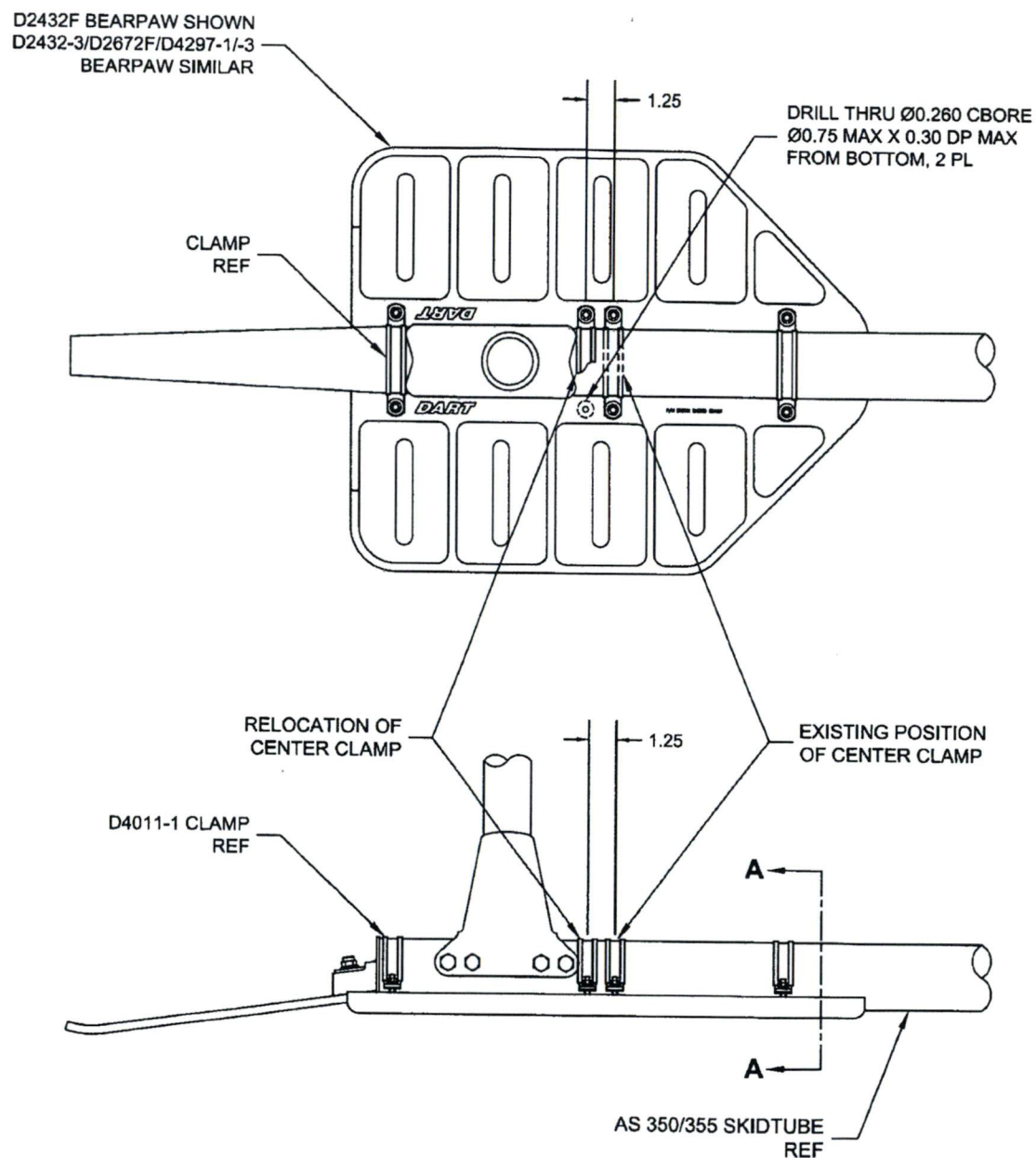


Figure 32-7: Bearpaw Installation/Modification (Center Clamp Relocation)
(Side View & Top View)

• COPYRIGHT © 2002 BY DART AEROSPACE LTD •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3

32.4 WEIGHT AND BALANCE

Installation	Weight	LATERAL		LONGITUDINAL	
		Arm	Moment	Arm	Moment
D350-578-011 <i>Bearpaw Installation (Standard)</i>	13.0 lb 5.91 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	2041 in-lb 23.58 m-kg
D350-578-013 <i>Bearpaw Installation (No Pockets)</i>	17.6 lb 8.00 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	2763 in-lb 31.93 m-kg
D350-578-015 <i>Bearpaw Installation (Run-on landing wearplate compatible)</i>	13.8 lb 6.26 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	2167 in-lb 24.98 m-kg
D350-578-017 <i>Bearpaw Installation (No pockets, Run-on landing wearplate compatible)</i>	18.6 lb 8.44 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	2920 in-lb 33.68 m-kg
D350-578-021 <i>Bearpaw Installation (Narrow Bearpaws)</i>	11.0 lb 5.00 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	1727 in-lb 19.95 m-kg
D350-578-031 <i>Wearplate Kit</i>	3.0 lb 1.36 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	471 in-lb 5.43 m-kg
D350-578-111 <i>Bearpaw and Wearplate Installation (Standard)</i>	16.0 lb 7.27 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	2512 in-lb 29.00 m-kg
D350-578-113 <i>Bearpaw and Wearplate Installation (No Pockets)</i>	20.6 lb 9.36 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	3234 in-lb 37.35 m-kg
D350-578-115 <i>Bearpaw and Wearplate Installation (Run-on landing wearplate compatible)</i>	16.8 lb 7.62 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	2638 in-lb 30.40 m-kg
D350-578-117 <i>Bearpaw and Wearplate Installation (No pockets, Run-on landing wearplate compatible)</i>	21.6 lb 9.80 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	3391 in-lb 39.10 m-kg
D350-578-121 <i>Bearpaw and Wearplate Installation (Narrow Bearpaws)</i>	14.0 lb 6.36 kg	0.0 in 0.0 m	0.0 in-lb 0.0 m-kg	157.0 in 3.99 m	2198 in-lb 25.38 m-kg

• COPYRIGHT © 2002 BY DART AEROSPACE LTD •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3

32.5 PARTS LIST**32.5.1 D350-578-011/-013/-015/-017/-021 BEARPAW INSTALLATION**

Qty -011	Qty -013	Qty -015	Qty -017	Qty -021	Qty -031	Part Number	Description
X						D350-578-011	BEARPAW INSTALLATION
	X					D350-578-013	BEARPAW INSTALLATION
		X				D350-578-015	BEARPAW INSTALLATION
			X			D350-578-017	BEARPAW INSTALLATION
				X		D350-578-021	BEARPAW INSTALLATION
					X	D350-578-031	WEARPLATE KIT
2						D2432F	Bearpaw
		2				D2432-3	Bearpaw
12	12	12	12	12		D2529	Washer
				2		D2672F	Bearpaw
12	12	12	12	12		D3601-1	Radius Block (Replaces D2274)
					2	D3859-041	Wearplate
6	6	6	6	6		D4011-1	Clamp (Replaces D2438)
6	6	6	6	6		D4012-1	Cushion (Replaces D2182B050)
	2					D4297-1	Bearpaw
			2			D4297-3	Bearpaw
12	12			12	12	AN4-16A	Bolt
		12	12		12	AN4-17A	Bolt
24	24	24	24	24	24	NAS1149D0463J	Washer
12	12	12	12	12	12	MS21042L4	Nut (or MS21042-4)

32.5.2 D350-578-111/-113/-115/-117/-12 BEARPAW INSTALLATION

Qty -111	Qty -113	Qty -115	Qty -117	Qty -121	Part Number	Description
X					D350-578-111	BEARPAW INSTALLATION
	X				D350-578-113	BEARPAW INSTALLATION
		X			D350-578-115	BEARPAW INSTALLATION
			X		D350-578-117	BEARPAW INSTALLATION
				X	D350-578-121	BEARPAW INSTALLATION
1					D350-578-011	Bearpaw Installation
	1				D350-578-013	Bearpaw Installation
		1			D350-578-015	Bearpaw Installation
			1		D350-578-017	Bearpaw Installation
				1	D350-578-021	Bearpaw Installation
1	1	1	1	1	D350-578-031	Wearplate Kit

• COPYRIGHT © 2002 BY DART AEROSPACE LTD •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3



ICA-D350-578

Page 1 of 18

DART AEROSPACE LTD.
1270 Aberdeen Street
Hawkesbury, ON, K6A 1K7
CANADA

Tel: 1 613 632 5200

Fax: 1 613 632 5246

e-mail: heli@dartaero.com

<http://www.dartaero.com>

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

ICA-D350-578

Bearpaw Installation

AIRBUS AS 350/355 MODELS

Prepared By:

V. Seib

Mechanical Designer

Checked By:

H. Siemens

Design Manager

Released By:

D. Shepherd, P. Eng.

Chief Engineer

• COPYRIGHT © 2002 BY DART AEROSPACE LTD •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3

REVISION RECORD

Revision No.	Issue Date	Description	Date Inserted	Inserted By
0	02.10.18	New Issue		
1	08.08.28	Inverted 3.1 & 3.2. Created new 3.3 Installation/ Modification in order to incorporate changes from DSI 9320.		
2	13.06.24	Update ICA format; Revised Chapter 5 to included Daily Check (5.1) and change 300 hour to 600 hour inspection; Incorporate DSI 9429, DSI 9539, DSI 9616		
3	15.03.12	Incorporate DSI 9689, add -111/-113/-115/-117/-121		

• COPYRIGHT © 2002 BY DART AEROSPACE LTD •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3

LIST OF EFFECTIVE PAGES

DESCRIPTION	PAGE(S)	REVISION
COVER	1	3
REVISION RECORD	2	3
LIST OF EFFECTIVE PAGES	3	3
TABLE OF CONTENTS	4	3
CHAPTER 0 – INTRODUCTION	5	3
CHAPTER 0 – INTRODUCTION	6	3
CHAPTER 4 – AIRWORTHINESS LIMITATIONS	7	3
CHAPTER 5 – INSPECTION REQUIREMENTS	8	3
CHAPTER 5 – INSPECTION REQUIREMENTS	9	3
CHAPTER 32 – LANDING GEAR	10	3
CHAPTER 32 – LANDING GEAR	11	3
CHAPTER 32 – LANDING GEAR	12	3
CHAPTER 32 – LANDING GEAR	13	3
CHAPTER 32 – LANDING GEAR	14	3
CHAPTER 32 – LANDING GEAR	15	3
CHAPTER 32 – LANDING GEAR	16	3
CHAPTER 32 – LANDING GEAR	17	3
CHAPTER 32 – LANDING GEAR	18	3

• COPYRIGHT © 2002 BY DART AEROSPACE LTD •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3

TABLE OF CONTENTS

CHAPTER 0	- INTRODUCTION (00-00-00)	5
0.1	SCOPE	5
0.2	ARRANGEMENT	5
0.3	DISTRIBUTION	5
0.4	COMPATIBILITY	5
CHAPTER 4	- AIRWORTHINESS LIMITATIONS (04-00-00)	7
CHAPTER 5	- INSPECTION REQUIREMENTS (05-00-00)	8
5.1	DAILY CHECK	8
5.3	OVERHAUL REQUIREMENTS	9
CHAPTER 32	- LANDING GEAR (32-00-00)	10
32.1	BEARPAW/WEARPLATE REMOVAL	10
32.2	BEARPAW RE-INSTALLATION	10
32.3	BEARPAW/WEARPLATE RE-INSTALLATION	10
32.4	WEIGHT AND BALANCE	17
32.5	PARTS LIST	18

• COPYRIGHT © 2002 BY DART AEROSPACE LTD •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3

CHAPTER 0 – INTRODUCTION (00-00-00)

0.1 SCOPE

This manual provides the requirements set forth in Appendix A of FAR Part 27 for the Instructions for continued Airworthiness of the Dart D350-578-XXX Bearpaw and Wearplate Kits when installed on the AS 350/355 model aircraft. These Instructions for Continued Airworthiness are to be referred to for inspection and maintenance when the Dart bearpaws are installed on, removed from, or in service on the rotorcraft.

0.2 ARRANGEMENT

The manual is arranged in ATA-100 format. This manual is only applicable to AS 350/355 model rotorcraft modified with the Dart D350-578-XXX Bearpaw and Wearplate Kits.

There are no abbreviations, acronyms, or symbolization which are not common to the aviation industry in this manual.

Units of measurement are expressed in Imperial and metric values and all torque values are standard values for the specified fastener combinations as defined in FAA AC 43.13, unless otherwise specified in this document.

No other Instructions for Continued Airworthiness for any product or appliance is inferred or addressed herein.

0.3 DISTRIBUTION

Any changes in the content or revision level of this document will be made available to any owner/operator who possesses this STC at www.dartaero.com

Additionally, any changes will be sent to Transport Canada. All changes will be recorded in the Record of Revisions page at the front of this manual.

0.4 COMPATIBILITY

Compatibility of this installation with the aircraft is the **responsibility of the installer**. Ensure that this installation does not conflict with a previous modification.

0.5 SYSTEM DESCRIPTION

• COPYRIGHT © 2002 BY DART AEROSPACE LTD •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: 3

The Dart D350-578-011/-021 Bearpaws mount to the aft end of the AS 350/355 skidtubes. One Bearpaw is installed on each skidtube and is attached with clamps and standard hardware. The purpose of the Bearpaw installation is to provide better stability on soft ground.

The D350-578-013 Bearpaw Kit is similar to the D350-578-011 Bearpaw Kit, except that the machined pockets have been removed per customer preference. The D350-578-013 Kit installs in the same way as the D350-578-011 Kit.

The D350-578-015/-017 Bearpaw Kits are designed to be compatible with D350-636-015/-016/-017/-018/-215/-216/-217/-218 Skidtubes equipped with training wearplates. They are also compatible with skidtubes equipped with standard wearplates/wearshoes. The D350-578-015 Bearpaw Kit is based on the original D350-578-011 Bearpaw Kit while the D350-578-017 Bearpaw Kit is based on the D350-578-013 Bearpaw Kit which doesn't have the machined pockets.

The Dart D350-578-031 Wearplate Kit can be installed on older model D350-578-XXX Bearpaw installations to protect them from damage. Note that the wearplates simplify the bearpaw installation by allowing the installation to be completed from the top side only.

The D350-578-111/-113/-115/-117/-121 Bearpaw kits allow the customer to order bearpaws with wearplates under one part number.

The components in the Dart Bearpaw Installation are as defined in the table in Section 32.4 of this document.

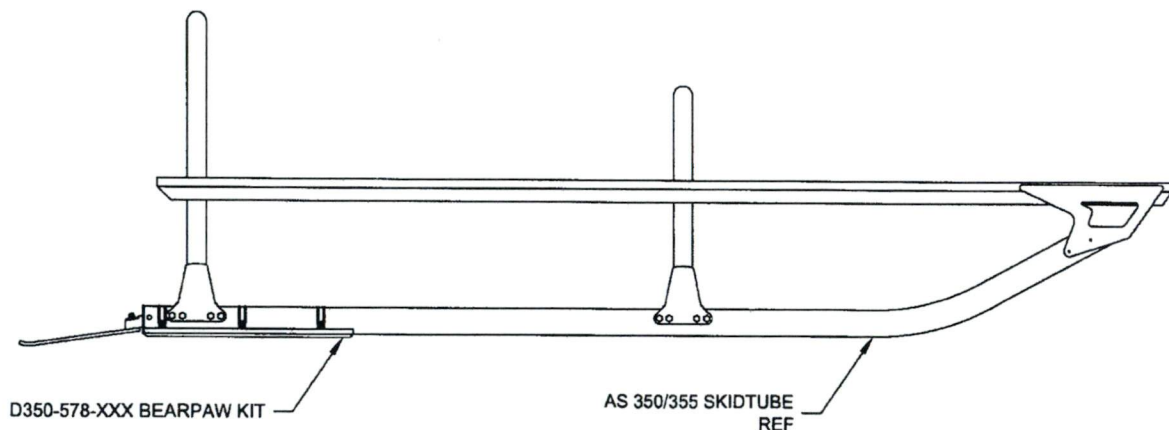
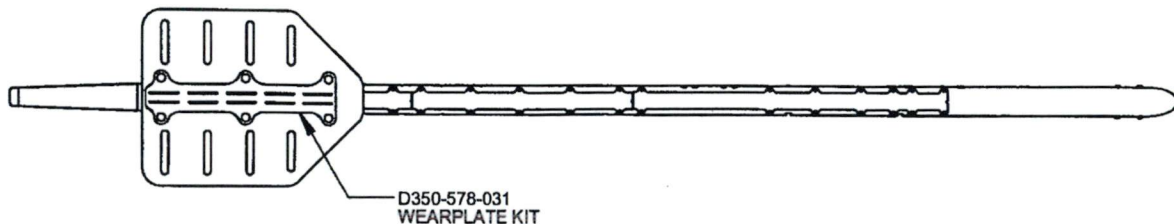


Figure 0-1: D350-578 Bearpaw Installations



**Figure 0-2: D350-578 Bearpaw Installations
(Bottom View)**

CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00)

The Airworthiness Limitations section is approved by the Minister and specifies maintenance required by any applicable airworthiness or operating rule unless an alternative program has been approved by the Minister.

No airworthiness limitations associated with this type design change

CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00) for FAA Aircraft

The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under Sections 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

No airworthiness limitations associated with this type design change.

Nathalie Barbeau

From: Christopher Stapor <cstapor@capitalehelicoptere.com>
Sent: Friday, June 17, 2016 1:16 PM
To: NATHALIE BARBEAU (nbarbeau@helitowcart.com)
Subject: insp prog
Attachments: SKMBT_28316061713130.pdf

Hi Nathalie, as discussed here are extracts of the Airbus Master servicing Manual. The inspection intervals have been increased from 100hr/12 month to 150hr 12 Month and from 500hr 24Month to 600hr/24month. They also allow for a 10% tolerance in both cases. I only printed page 1 of 28 for the 600hr inspection

Have a good week end.

**Best regards,
Christopher Stapor**

Directeur de maintenance/Director of maintenance



Centre de Maintenance Capitale Hélicoptère

1688, route de l'Aéroport, Québec (Québec) Canada G2G 0K1

T : 418.871.4466 F : 418.871.7170 Cell : 418-717-7251

capitalehelicoptere.com

cstapor@capitalehelicoptere.com

De : imprimant@capitalehelicoptere.com [mailto:imprimant@capitalehelicoptere.com]

Envoyé : 17 juin 2016 14:14

À : Christopher Stapor <cstapor@capitalehelicoptere.com>

Objet : Message from KMBT_283

File B-25
by Chris Stapor

Version: B2

MSM 05-21-00 150 FH // 12 M

ATA 21 - AIR CONDITIONING
21 - 51 AIR CONDITIONING

Task Number Description/Remarks	Documentation	Margin	Initial
21/51/20/000/000/025 Freon air conditioning system Visual inspection of the system. GVI	AMM 21-51-10, 6-1	15 FH 36 D	

ATA 63 - ROTOR DRIVE (S)
63 - 10 ENGINE-TO-M.G.B. COUPLING

Task Number Description/Remarks	Documentation	Margin	Initial
63/10/00/000/000/060 Flexible coupling Visual check. VC	AMM 63-11-00, 6-18	15 FH 36 D	
63/10/00/000/000/065 Hydraulic pump Drive-belt and bearing check. VC	AMM 63-11-00, 6-2 AMM 63-11-00, 6-15	15 FH 36 D	

63/10/00/000/000/200 Hydraulic pump splines belt drive AMM 63-11-00, 6-3 15 FH 36 D PRE MOD 079561 & PRE MOD 079566 Greasing. LUB	
63/10/00/000/000/270 Hydraulic pump drive bearing AMM 63-11-00, 3-1 15 FH 36 D POST MOD 079566 & PRE MOD 079568 Greasing. LUB	

ATA 65 - TAIL ROTOR DRIVE
65 - 10 TAIL ROTOR DRIVE SHAFT

Task Number Description/Remarks	Documentation	Margin	Initial
65/10/00/000/000/200 Rubber sleeve AMM 65-11-00, 6-13 15 FH 36 D POST MOD 079059 Visual check. VC			

Mechanic	Date	Inspector	Date
Name :	Signature :	Stamp :	Signature :

End of Document

Version: B2

MSM 05-22-00 600 FH // 24 M

ATA 21 - AIR CONDITIONING
21 - 21 VENTILATION/DEMISTING

Task Number Description/Remarks	Documentation	Margin	Initial
21/21/00/000/000/000 Heating pipe P2 installation. Check of the condition of the heat insulation and to make sure that there is no corrosion on the visible parts. If necessary, replace the pipes in accordance with task 21-21-00, 4-2 (AMM). DI	AMM 21-21-00, 6-1	60 FH 73 D	

21 - 51 AIR CONDITIONING

Task Number Description/Remarks	Documentation	Margin	Initial
21/51/20/000/000/030 Freon air conditioning system Detailed inspection of the installation. DI FT CLN	AMM 21-51-10, 6-2	60 FH 73 D	

Version: B2

MSM 05-21-00 150 FH // 12 M

ATA 21 - AIR CONDITIONING

21 - 51 AIR CONDITIONING

Task Number Description/Remarks	Documentation	Margin	Initial
21/51/20/000/000/025 Freon air conditioning system Visual inspection of the system. GVI	AMM 21-51-10, 6-1	15 FH 36 D	

ATA 63 - ROTOR DRIVE (S)

63 - 10 ENGINE-TO-M.G.B. COUPLING

Task Number Description/Remarks	Documentation	Margin	Initial
63/10/00/000/000/060 Flexible coupling Visual check. VC	AMM 63-11-00, 6-18	15 FH 36 D	
63/10/00/000/000/065 Hydraulic pump Drive-belt and bearing check. VC	AMM 63-11-00, 6-2 AMM 63-11-00, 6-15	15 FH 36 D	

63/10/00/000/000/200 Hydraulic pump splines belt drive AMM 63-11-00, 6-3 15 FH 36 D PRE MOD 079561 & PRE MOD 079566 Greasing. LUB	
63/10/00/000/000/270 Hydraulic pump drive bearing AMM 63-11-00, 3-1 15 FH 36 D POST MOD 079566 & PRE MOD 079568 Greasing. LUB	

ATA 65 - TAIL ROTOR DRIVE
65 - 10 TAIL ROTOR DRIVE SHAFT

Task Number Description/Remarks	Documentation	Margin	Initial
65/10/00/000/000/200 Rubber sleeve AMM 65-11-00, 6-13 15 FH 36 D POST MOD 079059 Visual check. VC			

Mechanic	Date	Inspector	Date
Name :	Signature :	Stamp :	Signature :

End of Document

Version: B2

MSM 05-22-00 600 FH // 24 M

ATA 21 - AIR CONDITIONING

21 - 21 VENTILATION/DEMISTING

Task Number Description/Remarks	Documentation	Margin	Initial
21/21/00/000/000/000 Heating pipe P2 installation. Check of the condition of the heat insulation and to make sure that there is no corrosion on the visible parts. If necessary, replace the pipes in accordance with task 21-21-00, 4-2 (AMM). DI	AMM 21-21-00, 6-1	60 FH 73 D	

21 - 51 AIR CONDITIONING

Task Number Description/Remarks	Documentation	Margin	Initial
21/51/20/000/000/030 Freon air conditioning system Detailed inspection of the installation. DI FT CLN	AMM 21-51-10, 6-2	60 FH 73 D	

CUSTOMER

Mail :: Sent: Re:

Page 1 of 1

Date: Wed, 14 Dec 2011 11:05:03 PM EST]

From: info@helitowcart.com

To: Terry Edwards <tedwards@horizonhelicopters.ca>

Subject: Re: manuals

Hello Terry,
We have had no changes since you got the last version. So rev.F is still good.

I am taking good note of your comment and when we have engineers update our documents next time around, I will ask to have the inspection adjusted as you mentioned. Very good suggestion.

I don't know when we will do the next update to the documents, but I will definitely keep you posted when that happens.

Warm salutations to you,

Ms Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Qc, Canada, G7A 5K6
Tel: +1.418.561.4512
Fax: +1.418.836.4575
email: info@helitowcart.com
www.helitowcart.com

Quoting Terry Edwards <tedwards@horizonhelicopters.ca>:

Hi there, we have your bearpaws installed on our astars, and I was wondering if there have been any revisions to the Maintenance manual supplement, I think the latest revision I have is F, 8 April 2010. If not, what are the chances you are planning a change to the inspection frequency, as the T inspection was changed from 500 to 600 hours a couple years ago and your inspection is required every 500 hours.

Terry Edwards
Director of Maintenance
Horizon Helicopters
Office: 867-633-6044
Fax: 867-633-6045
Cell: 867-335-2155

DRAFTS

DRAFT 2



314-0020-00-E Rev. G
BearPaw Model BP350

Installation Instructions – AS350/355

TABLE OF CONTENTS:

INTRODUCTION	p.2
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.3
INSTALLATION	p.4
BearPaw Installation	p.4
BearPaw Removal	p.6
Weight & Balance	p.6
Parts List	p.7
INSPECTION	p.8
Life Limited Items	p.8
Pre-Flight	p.8
Periodic Inspection Schedule	p.8
500 Hour or Yearly Inspection Details	p.8
Overhaul Requirements	p.10
Pad Recesses for Skid Wear Shoes and Leaf Spring	p.10
REVISIONS & APPROVAL	p.11
Annex A (BearPaw Assembly Drawing)	
Annex B (Tolerance Zones for Cracks and Wear)	



314-0020-00-E Rev. G
BearPaw Model BP350
Installation Instructions – AS350/355

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

Page 2 of 18



Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

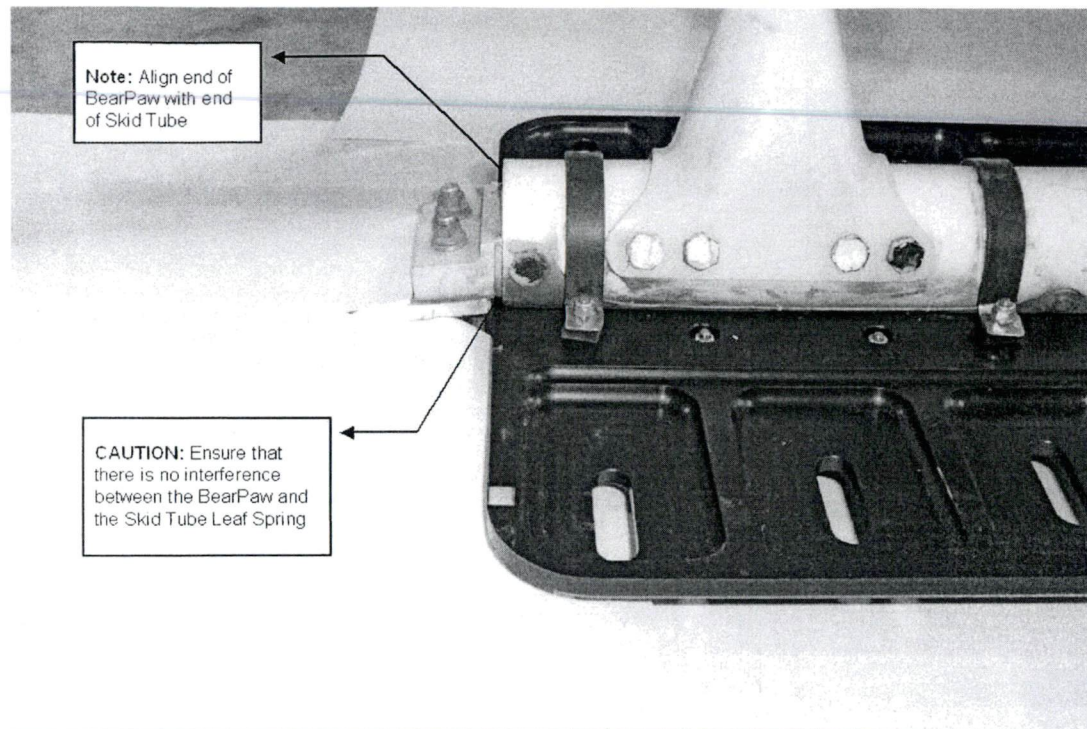


Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid

BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01) or (P/N 314-0018-01-S Streamline);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data ⁽¹⁾

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kg
Helitowcart BearPaw Model BP350 - <u>Streamline</u> (P/N 112-0002-00-S)	18,3 Lb ⁽²⁾ 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kg

Notes:

(1) Weight and moment provided are for full kit installation (two BearPaw assemblies).

(2) Weight is valid for 112-0002-00-S Rev D and Rev E.

Rev C

Parts Lists

The Helitowcart BearPaw detailed parts list is as follows.

Table 4 – Part List (one BearPaw)

Description	Qty	Part / Dwg No.	Additional Drawing Reference No./ Name
BearPaw Assembly Model BP350	1	112-0002-00 or 112-0002-00-S	BearPaw Assembly – Pocket Style, or Bear Paw Assembly – Streamline
BearPaw Pad ⁽¹⁾ Model BP350	1	314-0018-01 or 314-0018-01-S	BearPaw BP350 – Pocket Style Pad (VNR106) or BearPaw BP350 – Streamline Pad (VNR106-S)
U Shaped Clips	3	314-0019-15	BearPaw BP350 - U Shaped Clips (VNR107)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks 1/4"	6	314-0012-01	BearPaw – Filler block ¼" (VNR099)
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	IceBlade Assembly (VNR086)
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use pocked shaped BearPaw Pad P/N 314-0018-01 for assembly P/N 112-0002-00. Use streamlined Pad P/N 314-0018-01-S for assembly P/N 112-0002-00-S as applicable.

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to Tables 5 & 6 and Annex B – Tolerances for cracks & wear

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See Tables 5 & 6 and Annex B – Tolerances for cracks & wear.
- Replace all parts damaged beyond tolerances.

Airbus Policy:

150	—	1 year
1600	—	2 years
1200	—	4 years

Refused by Mirko
AZ

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	Pockets: Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	0,050	<u>Stiffeners</u> : NO cracks in stiffeners.

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000; and 0,88	0,250	
C	0,273 to 0,348 (variable thickness)	0,075	Cracks are acceptable in zone C under the Helitowcart BearPaw to a maximum length of 0,5". Stop drill cracks with a 0,125" hole.
D	0,49 (thickness after radius)	0,075	No cracks in the radius
E	0,38	0,075	No cracks in the BearPaw contour

* Table 6 is applicable to BearPaw 314-0018-01-S Rev D and Rev E

Handwritten notes:
 C?
 B?
 A?
 (with a large question mark and scribbles)

Pad Recesses for Skid Wear Shoes and Leaf Spring

BearPaw 314-0018-01-S Rev. D may be trimmed/machined to clear wear shoe mounting screws and skid leaf spring provided the recesses leave at least 0.500" thickness and provided that maximum lengths and widths of Figure 2 are not exceeded. These recesses are already included in BearPaw 314-0018-01-S Rev. E.

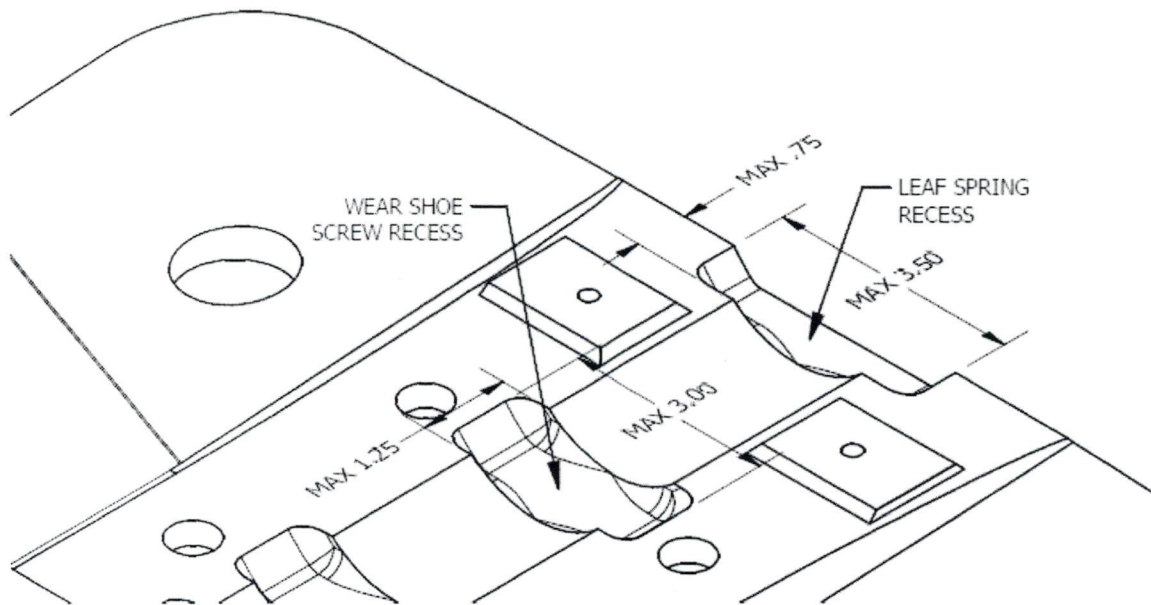


Figure 2 – Maximum Dimensions of Recesses

Overhaul Requirements


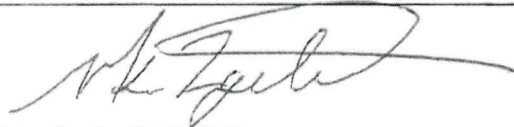
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to C of G data
December 21, 2012	F	Updated Pad Tolerances and Document identifications . Improved page set up for reader convenience.
April 29, 2016	G	Added recesses for skid wear shoes and leaf spring on streamline BearPaw and allowed trimming/machining of recesses on previous models provided the relief leaves at least 0.500" thickness.

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Date: May 30, 2016
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	Date: May 30, 2016

Annex A – BearPaw Assembly Drawing

See: BearPaw Assembly, dwg no. (112-0002-00) for Pocket style pad or;
 BearPaw Assembly, dwg no. (112-0002-00-S) for Streamline pad

Annex B – Tolerance Zones for Cracks and Wear

See: BearPaw Pad, dwg no. 314-0018-01 (VNR106) page 2 of 2 for Pocket style pad;
 BearPaw Pad, dwg no. 314-0018-01-S (VNR106-S) Rev D page 3 of 3 for Streamline pad without recess or;
 BearPaw Pad, dwg no. 314-0018-01-S (VNR106-S) Rev E page 4 of 4 for Streamline pad with recesses.



Annex A – BearPaw Assembly Drawing



BY VANAIR

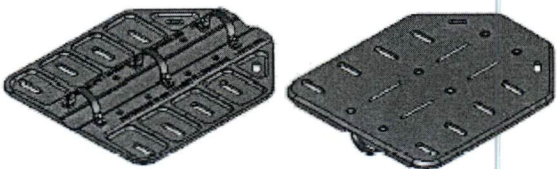
Installation Instructions – AS350/355

314-0020-00-E Rev. G

BearPaw Model BP350

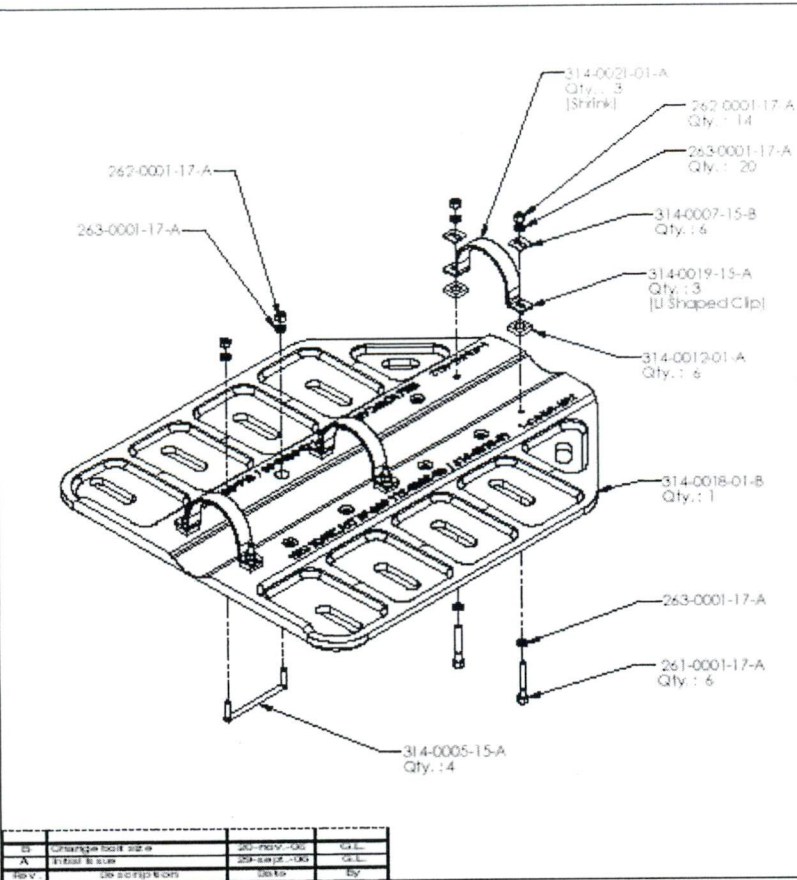
Pocket Style Pad – Dwg 112-0002-00

No.	Qty.	Description	Part #	Rev. #
1	1	Bearpaw BP-350 - Pad	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-15	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Slotted clip support	314-0007-15	B
5	6	Bearpaw - Filter Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-15	A
7	6	Bolt AN4-14A	261-0001-17	A
8	20	Washer AN960-416	263-0001-17	A
9	14	Nut MS20365-428	262-0001-17	A



Note : Iceblade assembly can be omitted from installation (Optional)

		Vanair Inc. 860 Marie-Victorin, Saint-Nicolas, Québec, Canada G7A 3S9 Tel: 418 351-4512 Fax: 418 351-4513 www.heliotowcart.com		860 Marie-Victorin, Saint-Nicolas, Québec, Canada G7A 3S9 Tel: 418 351-4512 Fax: 418 351-4513 www.heliotowcart.com	
Bearpaw BP-350 - Assembly					
Date of Revision 11/20/2004	Revision Number 5	Date of Release 11/20/2004	Revision Number 1.4	Date of Release 11/20/2004	Revision Number 1
Drawn by 112-0002-00			Checked by 112-0002-00		





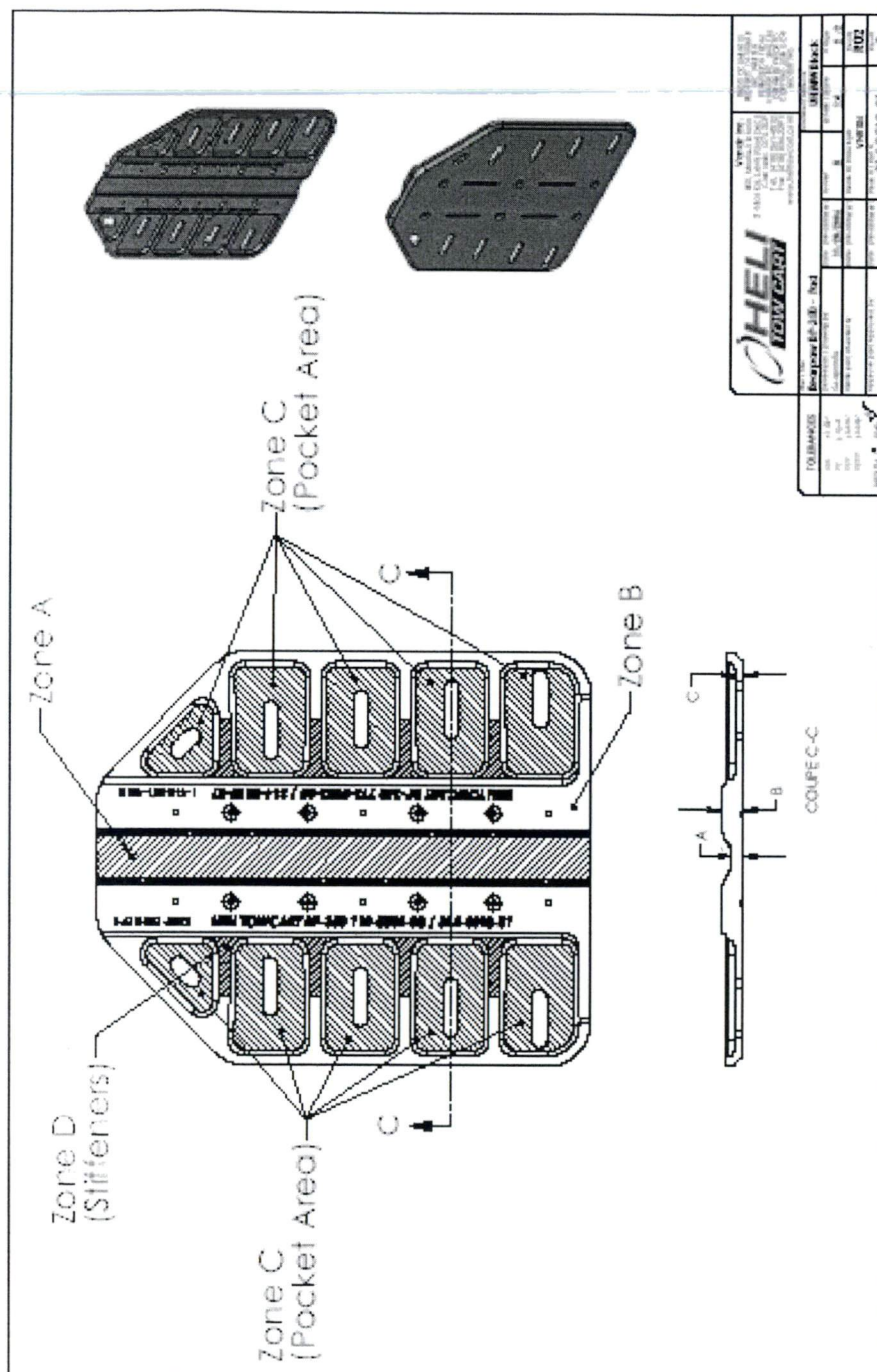
Note: Installation drawing is valid for 112-0002-00-S Rev D and Rev E.





Annex B – Tolerance Zones for Cracks and Wear

Pocket Style Pad – Dwg 314-0018-01 (VNR106) Page 2 of 2



TO BE MAINTAINED		REVISIONS	
REV	DESCRIPTION	DATE	BY
1	Initial Release	10/10/00	W. VAN AIR
2	Revised for AS350/355	10/10/00	W. VAN AIR
3	Revised for AS350/355	10/10/00	W. VAN AIR
4	Revised for AS350/355	10/10/00	W. VAN AIR
5	Revised for AS350/355	10/10/00	W. VAN AIR
6	Revised for AS350/355	10/10/00	W. VAN AIR
7	Revised for AS350/355	10/10/00	W. VAN AIR
8	Revised for AS350/355	10/10/00	W. VAN AIR
9	Revised for AS350/355	10/10/00	W. VAN AIR
10	Revised for AS350/355	10/10/00	W. VAN AIR
11	Revised for AS350/355	10/10/00	W. VAN AIR
12	Revised for AS350/355	10/10/00	W. VAN AIR
13	Revised for AS350/355	10/10/00	W. VAN AIR
14	Revised for AS350/355	10/10/00	W. VAN AIR
15	Revised for AS350/355	10/10/00	W. VAN AIR
16	Revised for AS350/355	10/10/00	W. VAN AIR
17	Revised for AS350/355	10/10/00	W. VAN AIR
18	Revised for AS350/355	10/10/00	W. VAN AIR
19	Revised for AS350/355	10/10/00	W. VAN AIR
20	Revised for AS350/355	10/10/00	W. VAN AIR
21	Revised for AS350/355	10/10/00	W. VAN AIR
22	Revised for AS350/355	10/10/00	W. VAN AIR
23	Revised for AS350/355	10/10/00	W. VAN AIR
24	Revised for AS350/355	10/10/00	W. VAN AIR
25	Revised for AS350/355	10/10/00	W. VAN AIR
26	Revised for AS350/355	10/10/00	W. VAN AIR
27	Revised for AS350/355	10/10/00	W. VAN AIR
28	Revised for AS350/355	10/10/00	W. VAN AIR
29	Revised for AS350/355	10/10/00	W. VAN AIR
30	Revised for AS350/355	10/10/00	W. VAN AIR
31	Revised for AS350/355	10/10/00	W. VAN AIR
32	Revised for AS350/355	10/10/00	W. VAN AIR
33	Revised for AS350/355	10/10/00	W. VAN AIR
34	Revised for AS350/355	10/10/00	W. VAN AIR
35	Revised for AS350/355	10/10/00	W. VAN AIR
36	Revised for AS350/355	10/10/00	W. VAN AIR
37	Revised for AS350/355	10/10/00	W. VAN AIR
38	Revised for AS350/355	10/10/00	W. VAN AIR
39	Revised for AS350/355	10/10/00	W. VAN AIR
40	Revised for AS350/355	10/10/00	W. VAN AIR
41	Revised for AS350/355	10/10/00	W. VAN AIR
42	Revised for AS350/355	10/10/00	W. VAN AIR
43	Revised for AS350/355	10/10/00	W. VAN AIR
44	Revised for AS350/355	10/10/00	W. VAN AIR
45	Revised for AS350/355	10/10/00	W. VAN AIR
46	Revised for AS350/355	10/10/00	W. VAN AIR
47	Revised for AS350/355	10/10/00	W. VAN AIR
48	Revised for AS350/355	10/10/00	W. VAN AIR
49	Revised for AS350/355	10/10/00	W. VAN AIR
50	Revised for AS350/355	10/10/00	W. VAN AIR
51	Revised for AS350/355	10/10/00	W. VAN AIR
52	Revised for AS350/355	10/10/00	W. VAN AIR
53	Revised for AS350/355	10/10/00	W. VAN AIR
54	Revised for AS350/355	10/10/00	W. VAN AIR
55	Revised for AS350/355	10/10/00	W. VAN AIR
56	Revised for AS350/355	10/10/00	W. VAN AIR
57	Revised for AS350/355	10/10/00	W. VAN AIR
58	Revised for AS350/355	10/10/00	W. VAN AIR
59	Revised for AS350/355	10/10/00	W. VAN AIR
60	Revised for AS350/355	10/10/00	W. VAN AIR
61	Revised for AS350/355	10/10/00	W. VAN AIR
62	Revised for AS350/355	10/10/00	W. VAN AIR
63	Revised for AS350/355	10/10/00	W. VAN AIR
64	Revised for AS350/355	10/10/00	W. VAN AIR
65	Revised for AS350/355	10/10/00	W. VAN AIR
66	Revised for AS350/355	10/10/00	W. VAN AIR
67	Revised for AS350/355	10/10/00	W. VAN AIR
68	Revised for AS350/355	10/10/00	W. VAN AIR
69	Revised for AS350/355	10/10/00	W. VAN AIR
70	Revised for AS350/355	10/10/00	W. VAN AIR
71	Revised for AS350/355	10/10/00	W. VAN AIR
72	Revised for AS350/355	10/10/00	W. VAN AIR
73	Revised for AS350/355	10/10/00	W. VAN AIR
74	Revised for AS350/355	10/10/00	W. VAN AIR
75	Revised for AS350/355	10/10/00	W. VAN AIR
76	Revised for AS350/355	10/10/00	W. VAN AIR
77	Revised for AS350/355	10/10/00	W. VAN AIR
78	Revised for AS350/355	10/10/00	W. VAN AIR
79	Revised for AS350/355	10/10/00	W. VAN AIR
80	Revised for AS350/355	10/10/00	W. VAN AIR
81	Revised for AS350/355	10/10/00	W. VAN AIR
82	Revised for AS350/355	10/10/00	W. VAN AIR
83	Revised for AS350/355	10/10/00	W. VAN AIR
84	Revised for AS350/355	10/10/00	W. VAN AIR
85	Revised for AS350/355	10/10/00	W. VAN AIR
86	Revised for AS350/355	10/10/00	W. VAN AIR
87	Revised for AS350/355	10/10/00	W. VAN AIR
88	Revised for AS350/355	10/10/00	W. VAN AIR
89	Revised for AS350/355	10/10/00	W. VAN AIR
90	Revised for AS350/355	10/10/00	W. VAN AIR
91	Revised for AS350/355	10/10/00	W. VAN AIR
92	Revised for AS350/355	10/10/00	W. VAN AIR
93	Revised for AS350/355	10/10/00	W. VAN AIR
94	Revised for AS350/355	10/10/00	W. VAN AIR
95	Revised for AS350/355	10/10/00	W. VAN AIR
96	Revised for AS350/355	10/10/00	W. VAN AIR
97	Revised for AS350/355	10/10/00	W. VAN AIR
98	Revised for AS350/355	10/10/00	W. VAN AIR
99	Revised for AS350/355	10/10/00	W. VAN AIR
100	Revised for AS350/355	10/10/00	W. VAN AIR

(VNR106-S) Rev D Page 3 of 3





HELITONCART
HEAVY DUTY TOWING CART

ZONE A

ZONE B

ZONE C

ZONE D

ZONE E

TOP

BOTTOM

ISO

DATE	CHANGE	BY	DATE	REVISION
2008-07-25	DESIGN	S. BERNER	2008-07-25	1
2008-07-25	DESIGN	S. BERNER	2008-07-25	2
2008-07-25	DESIGN	S. BERNER	2008-07-25	3
2008-07-25	DESIGN	S. BERNER	2008-07-25	4
2008-07-25	DESIGN	S. BERNER	2008-07-25	5
2008-07-25	DESIGN	S. BERNER	2008-07-25	6
2008-07-25	DESIGN	S. BERNER	2008-07-25	7
2008-07-25	DESIGN	S. BERNER	2008-07-25	8
2008-07-25	DESIGN	S. BERNER	2008-07-25	9
2008-07-25	DESIGN	S. BERNER	2008-07-25	10
2008-07-25	DESIGN	S. BERNER	2008-07-25	11
2008-07-25	DESIGN	S. BERNER	2008-07-25	12
2008-07-25	DESIGN	S. BERNER	2008-07-25	13
2008-07-25	DESIGN	S. BERNER	2008-07-25	14
2008-07-25	DESIGN	S. BERNER	2008-07-25	15
2008-07-25	DESIGN	S. BERNER	2008-07-25	16
2008-07-25	DESIGN	S. BERNER	2008-07-25	17
2008-07-25	DESIGN	S. BERNER	2008-07-25	18
2008-07-25	DESIGN	S. BERNER	2008-07-25	19
2008-07-25	DESIGN	S. BERNER	2008-07-25	20
2008-07-25	DESIGN	S. BERNER	2008-07-25	21
2008-07-25	DESIGN	S. BERNER	2008-07-25	22
2008-07-25	DESIGN	S. BERNER	2008-07-25	23
2008-07-25	DESIGN	S. BERNER	2008-07-25	24
2008-07-25	DESIGN	S. BERNER	2008-07-25	25
2008-07-25	DESIGN	S. BERNER	2008-07-25	26
2008-07-25	DESIGN	S. BERNER	2008-07-25	27
2008-07-25	DESIGN	S. BERNER	2008-07-25	28
2008-07-25	DESIGN	S. BERNER	2008-07-25	29
2008-07-25	DESIGN	S. BERNER	2008-07-25	30
2008-07-25	DESIGN	S. BERNER	2008-07-25	31
2008-07-25	DESIGN	S. BERNER	2008-07-25	32
2008-07-25	DESIGN	S. BERNER	2008-07-25	33
2008-07-25	DESIGN	S. BERNER	2008-07-25	34
2008-07-25	DESIGN	S. BERNER	2008-07-25	35
2008-07-25	DESIGN	S. BERNER	2008-07-25	36
2008-07-25	DESIGN	S. BERNER	2008-07-25	37
2008-07-25	DESIGN	S. BERNER	2008-07-25	38
2008-07-25	DESIGN	S. BERNER	2008-07-25	39
2008-07-25	DESIGN	S. BERNER	2008-07-25	40
2008-07-25	DESIGN	S. BERNER	2008-07-25	41
2008-07-25	DESIGN	S. BERNER	2008-07-25	42
2008-07-25	DESIGN	S. BERNER	2008-07-25	43
2008-07-25	DESIGN	S. BERNER	2008-07-25	44
2008-07-25	DESIGN	S. BERNER	2008-07-25	45
2008-07-25	DESIGN	S. BERNER	2008-07-25	46
2008-07-25	DESIGN	S. BERNER	2008-07-25	47
2008-07-25	DESIGN	S. BERNER	2008-07-25	48
2008-07-25	DESIGN	S. BERNER	2008-07-25	49
2008-07-25	DESIGN	S. BERNER	2008-07-25	50
2008-07-25	DESIGN	S. BERNER	2008-07-25	51
2008-07-25	DESIGN	S. BERNER	2008-07-25	52
2008-07-25	DESIGN	S. BERNER	2008-07-25	53
2008-07-25	DESIGN	S. BERNER	2008-07-25	54
2008-07-25	DESIGN	S. BERNER	2008-07-25	55
2008-07-25	DESIGN	S. BERNER	2008-07-25	56
2008-07-25	DESIGN	S. BERNER	2008-07-25	57
2008-07-25	DESIGN	S. BERNER	2008-07-25	58
2008-07-25	DESIGN	S. BERNER	2008-07-25	59
20				

TABLE OF CONTENTS:

INTRODUCTION	p.2
Scope	p.2
General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.3
INSTALLATION	p.4
BearPaw Installation	p.4
BearPaw Removal	p.6
Weight & Balance	p.6
Parts List	p.7
INSPECTION	p.8
Life Limited Items	p.8
Pre-Flight	p.8
Periodic Inspection Schedule	p.8
500 Hour or Yearly Inspection Details	p.8
Overhaul Requirements	p.9
Pad Recesses for Skid Wear Shoes and Leaf Spring	p.10
REVISIONS & APPROVAL	p.11
Annex A (BearPaw Assembly Drawing)	
Annex B (Tolerance Zones for Cracks and Wear)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

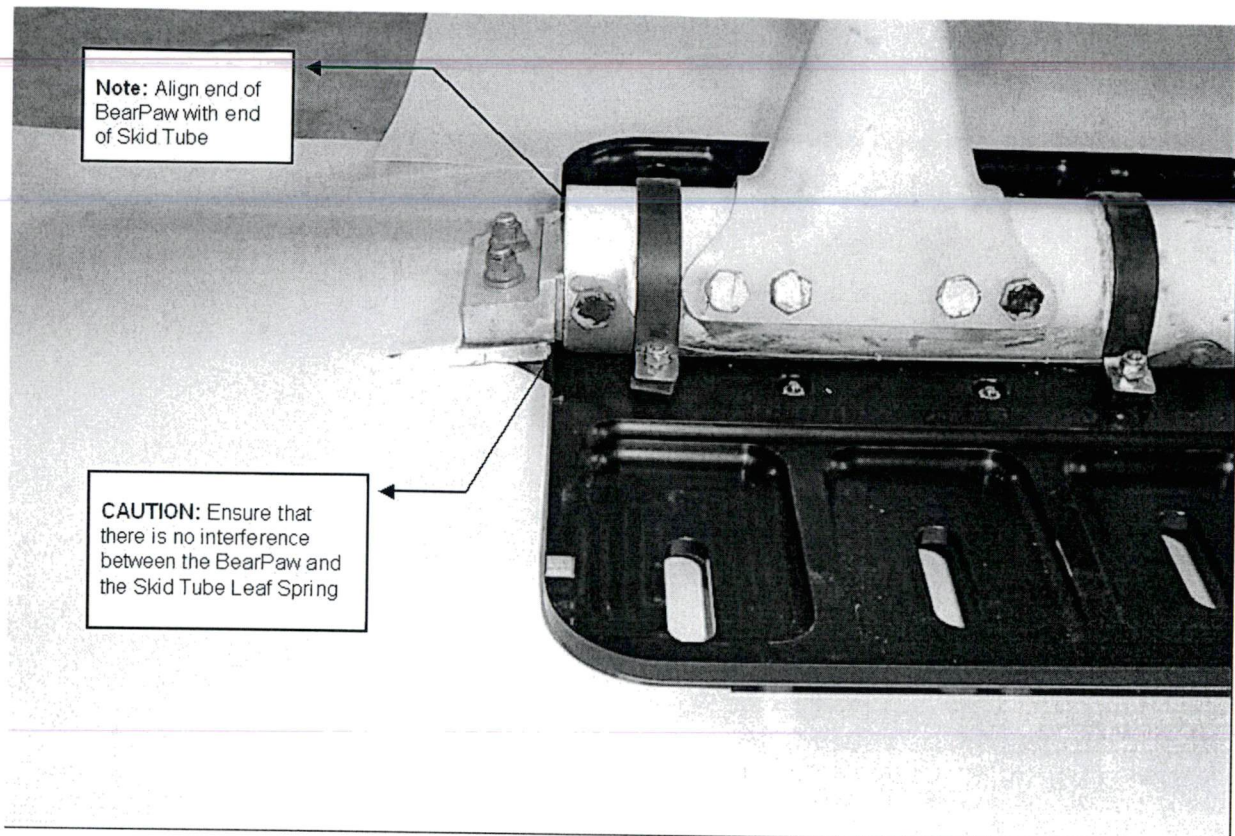


Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid

BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01) or (P/N 314-0018-01-S Streamline);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kG
Helitowcart BearPaw Model BP350 - <u>Streamline</u> (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kG

Note: Weight and moment provided are for full kit installation.

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Per Pad or Pair?

Table 4 – Parts List

Description	Qty	Part / Dwg No.	Additional Drawing Reference No./ Name
BearPaw Model BP350	1	112-0002-00	112-0002-00 / BearPaw Assembly, or 112-0002-00-S /Bear Paw Streamline Assembly
<i>1st one with pocket</i> BearPaw pad ⁽¹⁾	1	314-0018-01	BearPaw BP350 – Pad (VNR106)
<i>2nd one</i> BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	BearPaw BP350 – Pad Streamline (VNR106-S)
U Shaped Clips	3	314-0019-15	BearPaw BP350 - U Shaped Clips (VNR107)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks 1/4"	6	314-0012-01	BearPaw – Filler block ¼" (VNR099)
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	IceBlade Assembly (VNR086)
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use pocked shaped BearPaw Pad P/N 314-0018-01 for assembly P/N 112-0002-00. Use streamlined Pad P/N 314-0018-01-S for assembly P/N 112-0002-00-S as applicable.

INSPECTION

Life Limited Items

Three are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
- Tables 5 & 6 and Annex B – Tolerances for cracks & wear

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tables 5 & 6 and Annex B – Tolerances for cracks & wear:

following

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	0,050	<u>Stiffeners:</u> NO cracks in stiffeners.

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (inches)	Cracks
A	0,50	0,050	
B	1,000; and 0,88	0,250	<i>Skid wear shoe clearance</i>
C	0,273 to 0,348 (variable thickness)	0,075	<u>Pockets:</u> Cracks are acceptable in the pocket under the Helitowcart BearPaw to a maximum length of 0,5". Stop drill cracks with a 0,125" hole.
D	0,49 (thickness after radius)	0,075	No cracks in the radius
E	0,38	0,075	No cracks in the BearPaw contour

Pad necessary for skid wear shoe

The Bearpaw may be trimmed/machined to clear wear shoe mounting screws and skid leaf spring provided the relief leaves at least 0.500" thickness. Relief width is maximum 1.25" for the screws and 0.75" for the leaf spring (in skid axial direction).

Overhaul Requirements

- Not applicable for the designated application of this device.

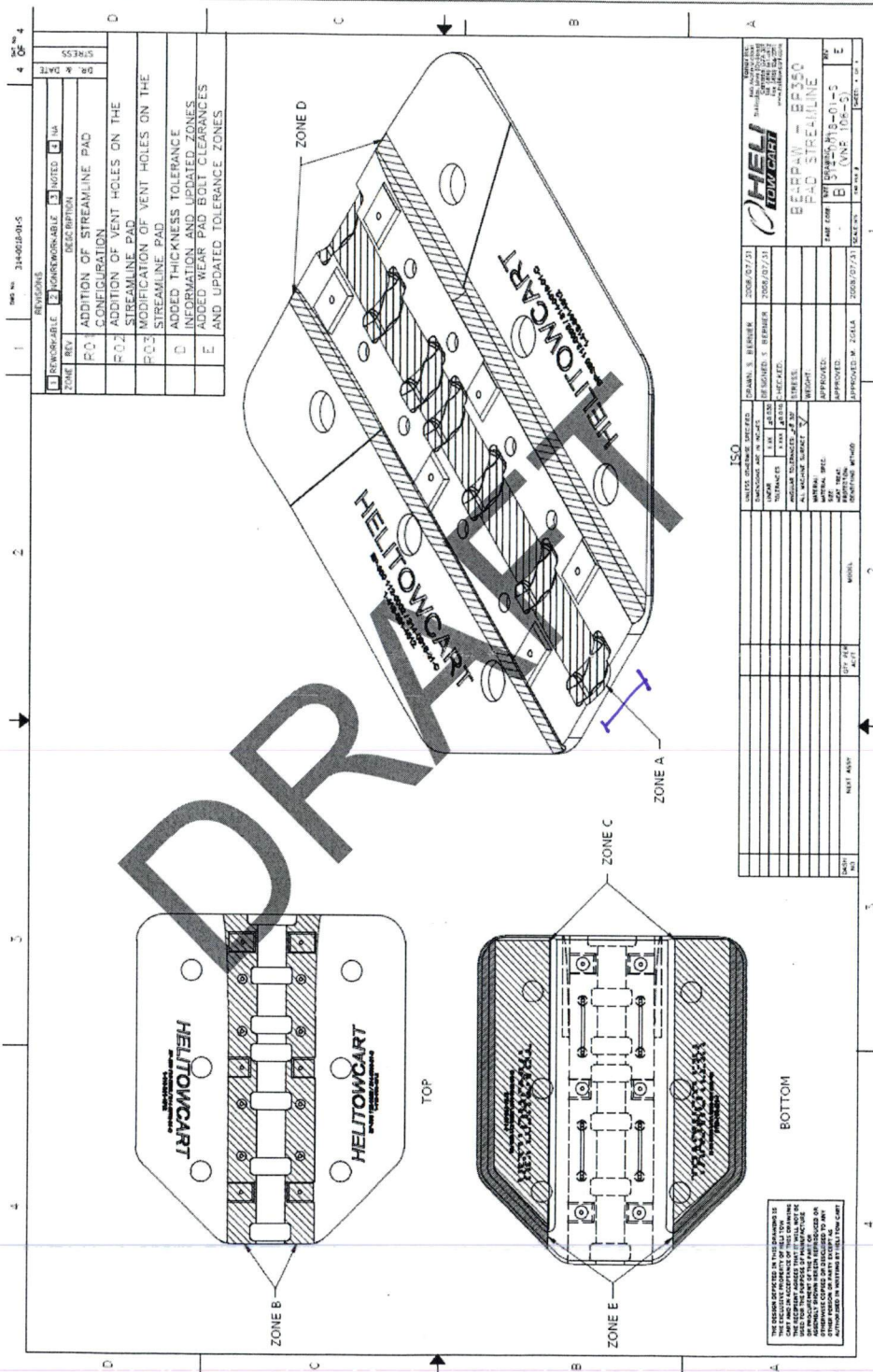


Annex B

BearPaw Pad, Drawing no. 314-0018-01-S (VNR106-S) Streamline Style Pad.

DRAFT





- 3.2.4 Lower the aircraft.
- 3.2.5 Update the aircraft log book to indicate installation of the D350-578-015/-017 Bearpaw Kit and adjust the empty weight and balance record for the rotorcraft with the information given in section 4.0

3.3 D350-578-031 WEARPLATE INSTALLATION

- 3.3.1 Customers with old style bearpaws will need to re-work the counterbore on the bottom of the bearpaws as shown in Figure 6 and 7.
- 3.3.2 Otherwise, the D350-578-031 wearplate kit should be installed with the bearpaws as outlined in Section 3.5 or 3.6 of these Installation Instructions.

3.4 MODIFIED INSTALLATION (ALTERNATE CENTER CLAMP LOCATION)

Note: not compatible with D350-578-031 Wearplate Kit.

- 3.4.1 Drill and counterbore Bearpaw at center clamp location as shown in Figure 8.
- 3.4.2 Jack up the aircraft. Ensure the skidtubes are serviceable.
- 3.4.3 Position the D2432F/-3 (D350-578-011/-015) or D4297-1/-3 (D350-578-013/-017) or D2672F (D350-578-021) Bearpaw on the aft end of each skidtube as shown in Figure 8.
- 3.4.4 Install the D4011-1 clamps with the hardware as shown in Figure 3 or 5 as applicable. Although not generally necessary, it is also acceptable to replace the AN4-XXA bolts with longer or shorter AN4 bolts, if required
CAUTION: The torque on the nuts should be limited to 20 in-lb (2.3 Nm).

- 3.4.5 The Bearpaw may be relieved to clear wearshoe mounting screws provided the relief leaves 0.375" (9.53mm) thickness.

- 3.4.6 Lower the aircraft.
- 3.4.7 Update the aircraft log book to indicate installation of the D350-578-XXX Bearpaw and adjust the empty weight and balance record for the rotorcraft with the information given in section 4.0

3.5 D350-578-111/-113/-121 BEARPAW INSTALLATION

- 3.5.1 Jack up the aircraft. Ensure the skidtubes are serviceable.
- 3.5.2 If the Bearpaws are being installed on Dart Skidtubes remove the D3537-1 or D2648-1 Wearpads prior to installing the Bearpaws. It is not necessary to remove the Dart Wearplates and gaskets. Re-install attachment hardware into open inserts.
- 3.5.3 Align the D3859-041 Wearplate with the holes in the bottom of the bearpaw.
- 3.5.4 Position the D2432F (D350-578-011/-111) or D4297-1 (D350-578-013/-113) or D2672F (D350-578-021/-121) Bearpaw with D3859-041 Wearplate on the aft end of each skidtube as shown in Figure 2.

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50 <i>13mm</i>	0,050 $\pm 1.27mm$	
B	1,000 <i>25mm</i>	0,250 $\pm 6.35mm$	
C	0,375 <i>9.5mm</i>	0,075 $\pm 1.9mm$	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50 <i>13mm</i>	0,050 $\pm 1.27mm$	<u>Stiffeners:</u> NO cracks in stiffeners.

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)*

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50 <i>13mm</i>	0,050 $\pm 1.27mm$	
B	1,000; and 0,88 <i>25mm & 22mm</i>	0,250 $\pm 6.35mm$	
C	0,273 to 0,348 (variable thickness) <i>7mm to 9mm</i>	0,075 $\pm 1.9mm$	<u>Pockets:</u> Cracks are acceptable in the <u>pocket under the Helitowcart BearPaw</u> to a maximum length of 0,5". Stop drill cracks with a 0,125" hole.
D	0,49 (thickness after radius) <i>12.9mm</i>	0,075 $\pm 1.9mm$	No cracks in the radius
E	0,38 <i>9.6mm</i>	0,075 $\pm 1.9mm$	No cracks in the BearPaw contour

* Table 6 is applicable to streamline pad with or without recesses.

Overhaul Requirements

- Not applicable for the designated application of this device.

Pad Recesses for Skid Wear Shoes and Leaf Spring

The Bearpaw may be trimmed/machined to clear wear shoe mounting screws and skid leaf spring provided the recesses leave at least 0.500" thickness and provided that maximum lengths and widths of Figure 2 are not exceeded.

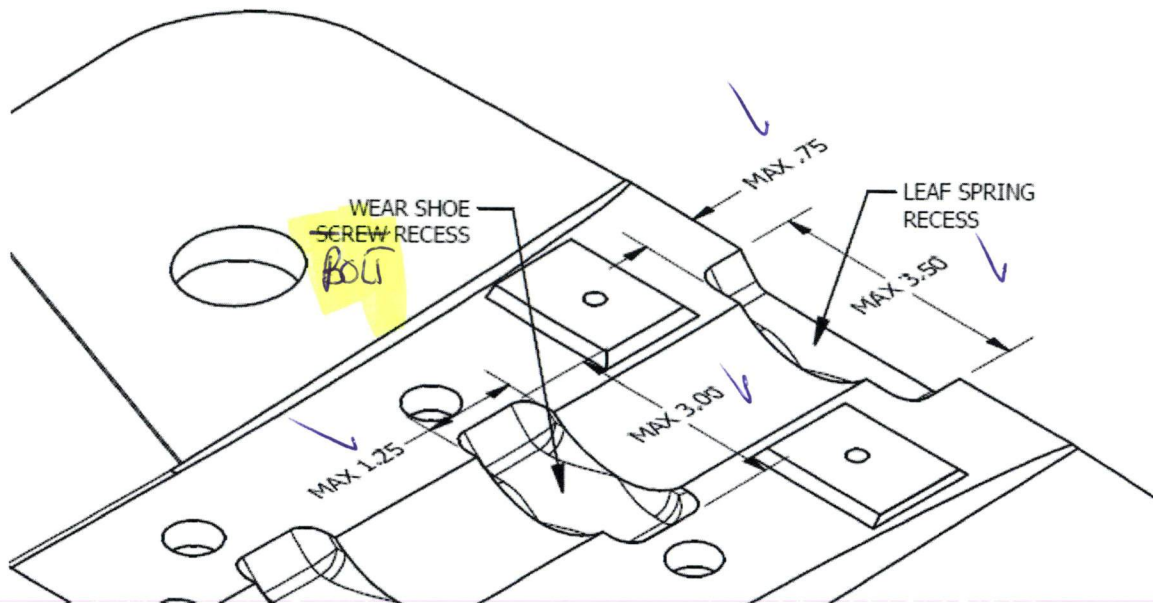


Figure 2 – Maximum Dimensions of Recesses

Pad Recesses for Skid Wear Shoes and Leaf Spring

The Bearpaw may be trimmed/machined to clear wear shoe mounting screws and skid leaf spring provided the recesses leave at least 0.500" thickness and provided that maximum lengths and widths of Figure 2 are not exceeded.

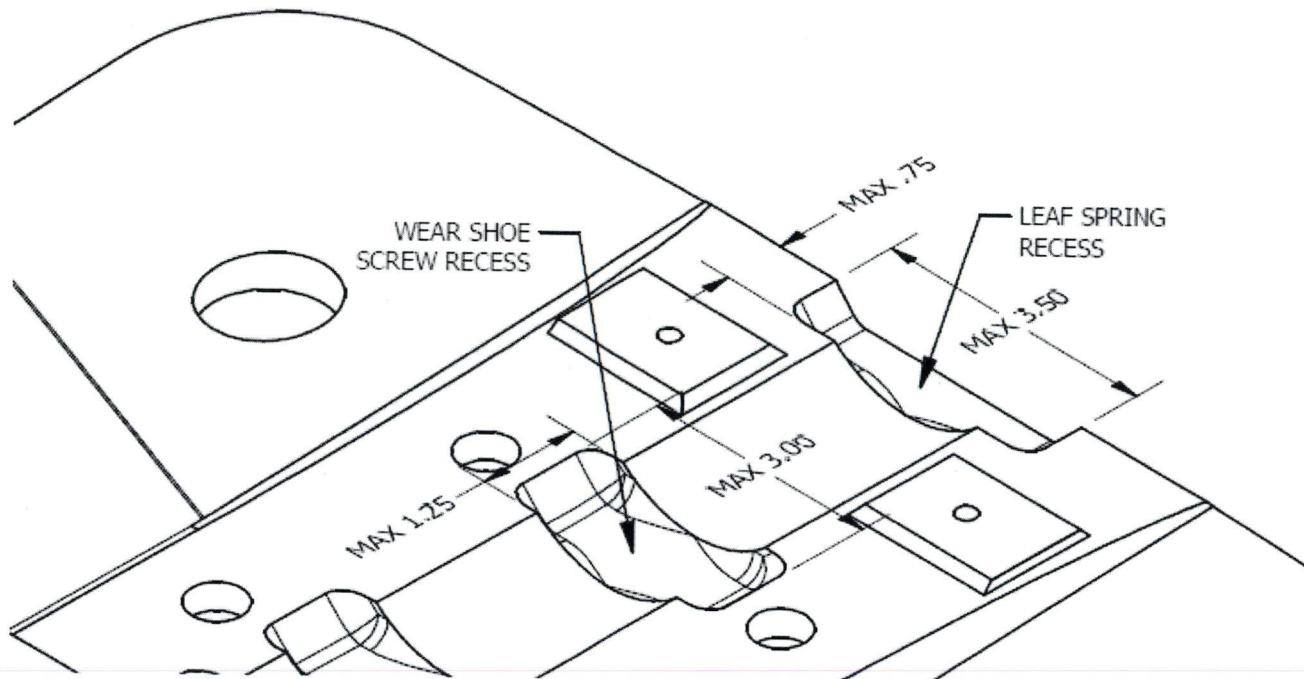



Figure 2 – Maximum Dimensions of Recesses

REVISIONS & APPROVAL**Revisions**

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to C of G data
December 21, 2012	F	Updated Pad Tolerances and Document identifications . Improved page set up for reader convenience.
April 26, 2016	G	Added recesses for wear pad screws and skid leaf spring on streamline BearPaw and allowed trimming/machining of recesses on previous models provided the relief leaves at least 0.500" thickness.

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Date: Dec 21, 2012
External Approval :		
Transport Canada	Mirko Zgela, DAR #310	Date: Dec 21, 2012

Annex A – BearPaw Assembly Drawing

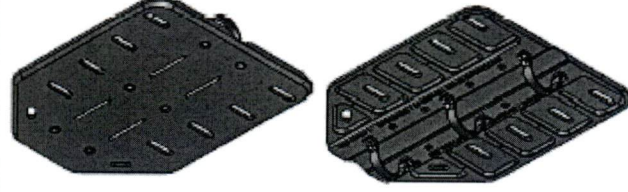
See: BearPaw Assembly, dwg no. (112-0002-00) for Pocket style pad or;
BearPaw Assembly, dwg no. (112-0002-00-S) for Streamline pad

Annex B – Tolerance Zones for Cracks and Wear

See: BearPaw Pad, dwg no. 314-0018-01 (VNR106) page 2 of 2 for Pocket style pad;
BearPaw Pad, dwg no. 314-0018-01-S (VNR106-S) Rev D page 3 of 3 for Streamline pad without recess or;
BearPaw Pad, dwg no. 314-0018-01-S (VNR106-S) Rev E page 4 of 4 for Streamline pad with recesses.

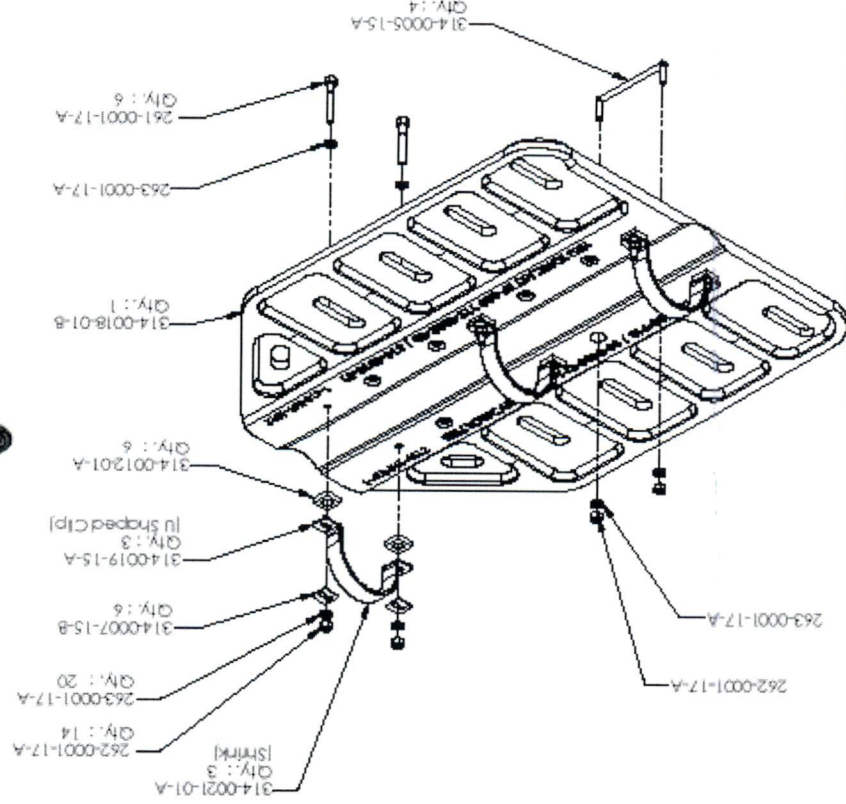
Annex A – BearPaw Assembly Drawing

No.	Qty.	Description	Part #	Rev #
1	1	Bearpaw BP-350 - Pod	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-15	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Sorted dip support	314-0007-15	B
5	6	Bearpaw - Filter Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-15	A
7	6	Bolt AN4-14A	261-0001-17	A
8	20	Washer AN650-416	263-0001-17	A
9	14	Nut MS20365-428	262-0001-17	A



Note : Iceblade assembly can be omitted from installation (Optional)

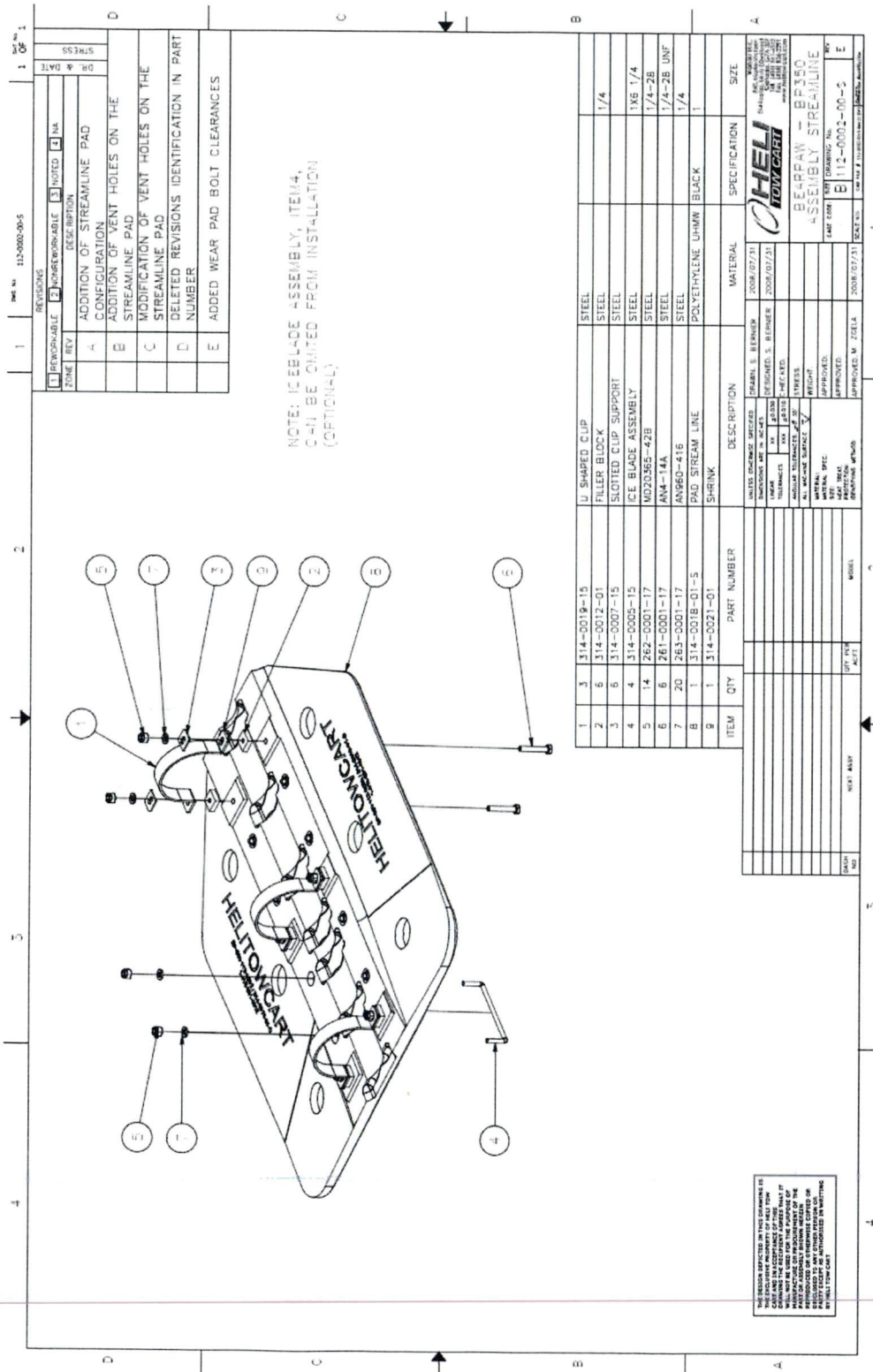
HELI TOW CART 860 Marie-Victorin, Saint-Nicolas, Lévis, Québec, Canada G7A 3S9 Tel: 1-418-836-2291 Fax: 1-418-561-4512 www.helitowcart.com info@helitowcart.com	Revision 112-0002-00 112-0002-00 112-0002-00



Rev	By	Date	Appr
A	112-0002-00	112-0002-00	112-0002-00
B	112-0002-00	112-0002-00	112-0002-00

Generation 2

Streamline Pad – Dwg 112-0002-00-S



Geomet 3 - Shearline with
Clean Shear Bell
Roses



Invoice: **5725b** Date: 2016 03 30

Work Order

Buyer: **Srivivat and Partner Co. Ltd**
No. 57 Soi Phutthabucha Rd
Bangmod Tungkru
Bangkok 10140 Thailand

Ship. Terms: **EXW - Quebec, Canada**
Ship to: **Electricity Generating Authority of Thailand**
53 Moo 2 Charansanitwong Road, Bang Krui
Nonthaburi 11130 Thailand

Seller: **Helitowcart (Vanair inc.)**
Shipping from: 877A Alphonse-Desrochers
St-Nicolas, Levis,
Quebec, Canada, G7A 5K6

Contact: **Yanee Thiraphongphrom**
Email: sales@srivivat.com
Tel: 66 0 899 448 249
Terms: Bank Transfer
Notes:

PO: EGAT/002/59

Contact: **Yanee Thiraphongphrom**
Email: sales@srivivat.com
Tel: 66 0 899 448 249
Excluded: Duties, Taxes & Unloading
Extra Insurance: na
Forwarder:
Broker:

Package Qty: 1
Weight: 2200lbs
Size: 5'x6'x30"

Contact: Nathalie Barbeau
Email: info@helitowcart.com
Web: www.helitowcart.com
Tel: +1 418 561 4512
Fax: +1 418 836 4575
Can Fed Tax ID: 120 493 044 RM0001
Qc Prov Tax ID: 100 228 0473 TQ0002
BC Prov Tax ID: PST-1006-7681
Nafta: 120 493 044
US Bond: 990 458 243

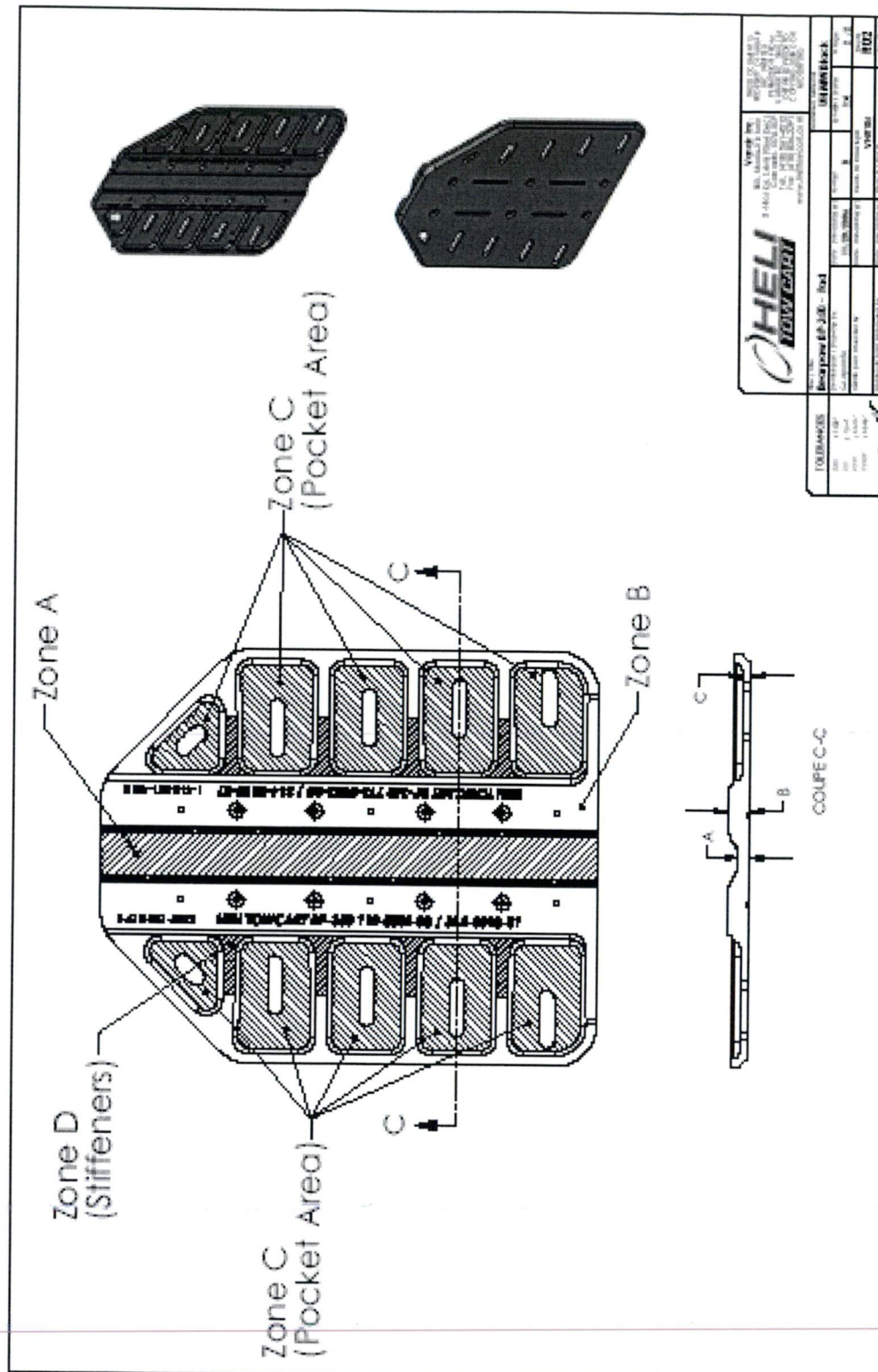
Products Made in Canada

Model	Description	HS code:	Qty:			Currency:
V1022-SP30	Heli-Carrier (Unité Fabrication Spéciale avec Moteur de traction de V1030 et Pompe 8.5cc)		1			
BAGM27	Battery AGM, Group 27, 12v Deep Cycle / LESS THAN 6 MONTHS - Get From Michel		8			
	Take picture of date label					
OEBC	Option Extra Battery Compartment		1			
OPS	Option Power Supply		1			
AT1000-AS350	Attachment device for EC130		1			
AT1000-EC130	Attachment device for EC130		1			

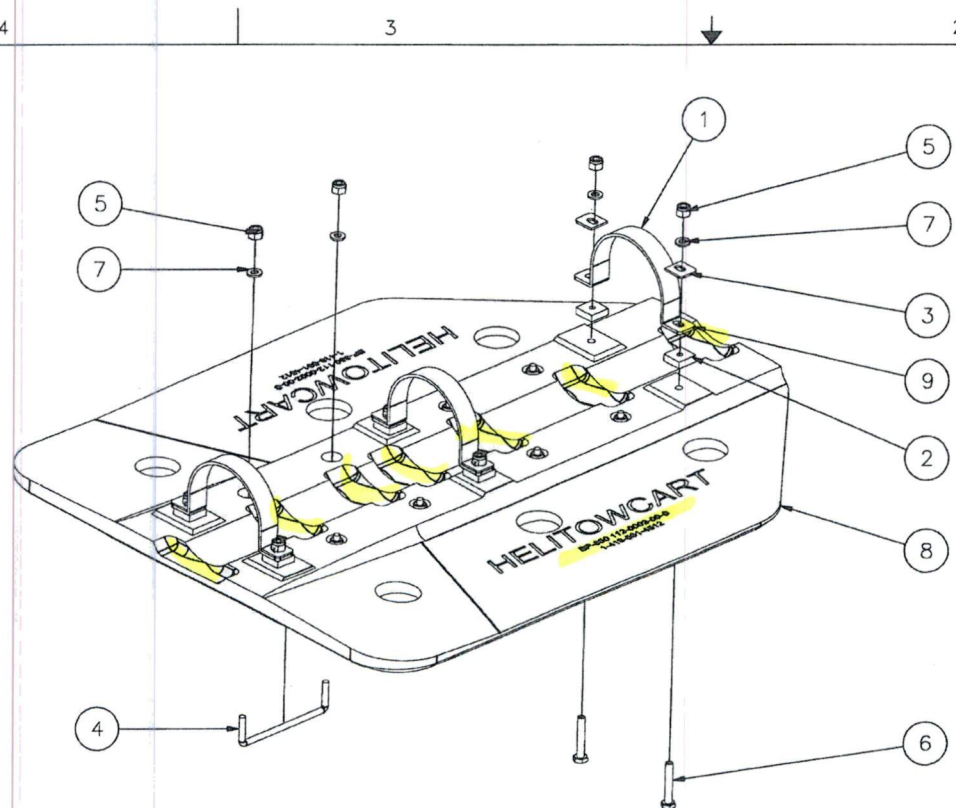
Notes:

Annex B – Tolerance Zones for Cracks and Wear

Pocket Style Pad – Dwg 314-0018-01 (VNR106) Page 2 of 2



[illegible]



1		DWG No 112-0002-00-S		1 OF 1	
REVISIONS					
1		2		3	
REWORKABLE		NONREWORKABLE		NOTED	
4		5		6	
NA					
ZONE	REV	DESCRIPTION			
	A	ADDITION OF STREAMLINE PAD CONFIGURATION			
	B	ADDITION OF VENT HOLES ON THE STREAMLINE PAD			
	C	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD			
	D	DELETED REVISIONS IDENTIFICATION IN PART NUMBER			
	E	ADDED RECESSES FOR SKID WEAR SHOES AND LEAF SPRING			

Corrected P/N drilled auto pad.

NOTE: ICEBLADE ASSEMBLY, ITEM4, CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

1	3	314-0019-15	U SHAPED CLIP	STEEL		
2	6	314-0012-01	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262-0001-17	MD20365-42B	STEEL		1/4-28
6	6	261-0001-17	AN4-14A	STEEL		1/4-28 UNF
7	20	263-0001-17	AN960-416	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314-0021-01	SHRINK			
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

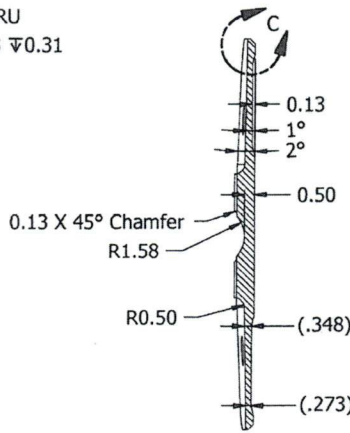
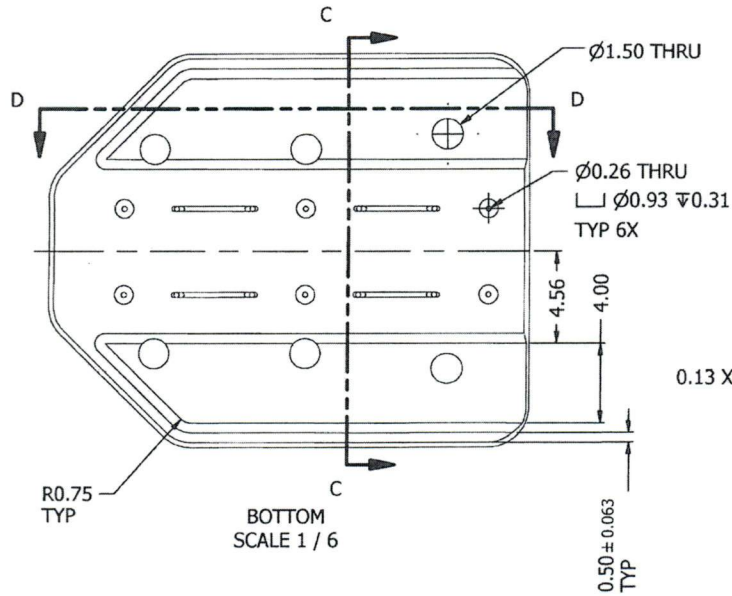
UNLESS OTHERWISE SPECIFIED		DRAWN: S. BERNIER	2008/07/31			BEARPAW - BP350 ASSEMBLY STREAMLINE		Vendor Inc. 514 Route 144, 10000 Canada, Q1A 3P1 Tel: (418) 851-5512 Fax: (418) 851-2291 www.helitowcart.com	
DIMENSIONS ARE IN INCHES		DESIGNED: S. BERNIER	2008/07/31						
LINEAR		XX	±0.030	CHECKED:		CAGE CODE:		SIZE	
TOLERANCES		XXX	±0.010	STRESS:		DRAWING No.		REV	
ANGULAR TOLERANCES		±0.20°		WEIGHT:		B		E	
ALL MACHINE SURFACES		✓		APPROVED:		112-0002-00-S			
MATERIAL:				APPROVED: M. ZGELA		2008/07/31			
MATERIAL SPEC.									
SIZ.									
HEAT TREAT:									
PROTECTION:									
IDENTIFYING METHOD:									
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	SCALE: NTS		CAD FILE: 112-0002-00-S.dwg		DATE: 2008/07/31	

Version finale approuvée
P. Balle 20/6/0622

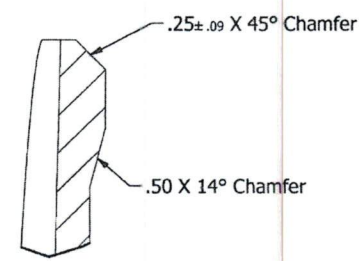
DWG No 314-0018-01-S

SHEET 2 OF 4

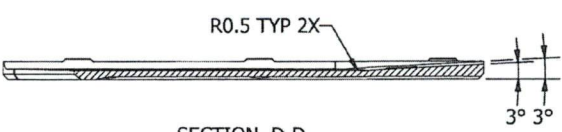
REVISIONS			
1	2	3	4
REWORKABLE	NONREWORKABLE	NOTED	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES	
	E	ADDED RECESSES FOR SKID WEAR SHOES AND LEAF SPRING	



SECTION C-C
SCALE 1 / 6



DETAIL C
SCALE 1 : 1



SECTION D-D
SCALE 1 / 6

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

DASH NO	NEXT ASSY	QTY PER ACFT	MODEL

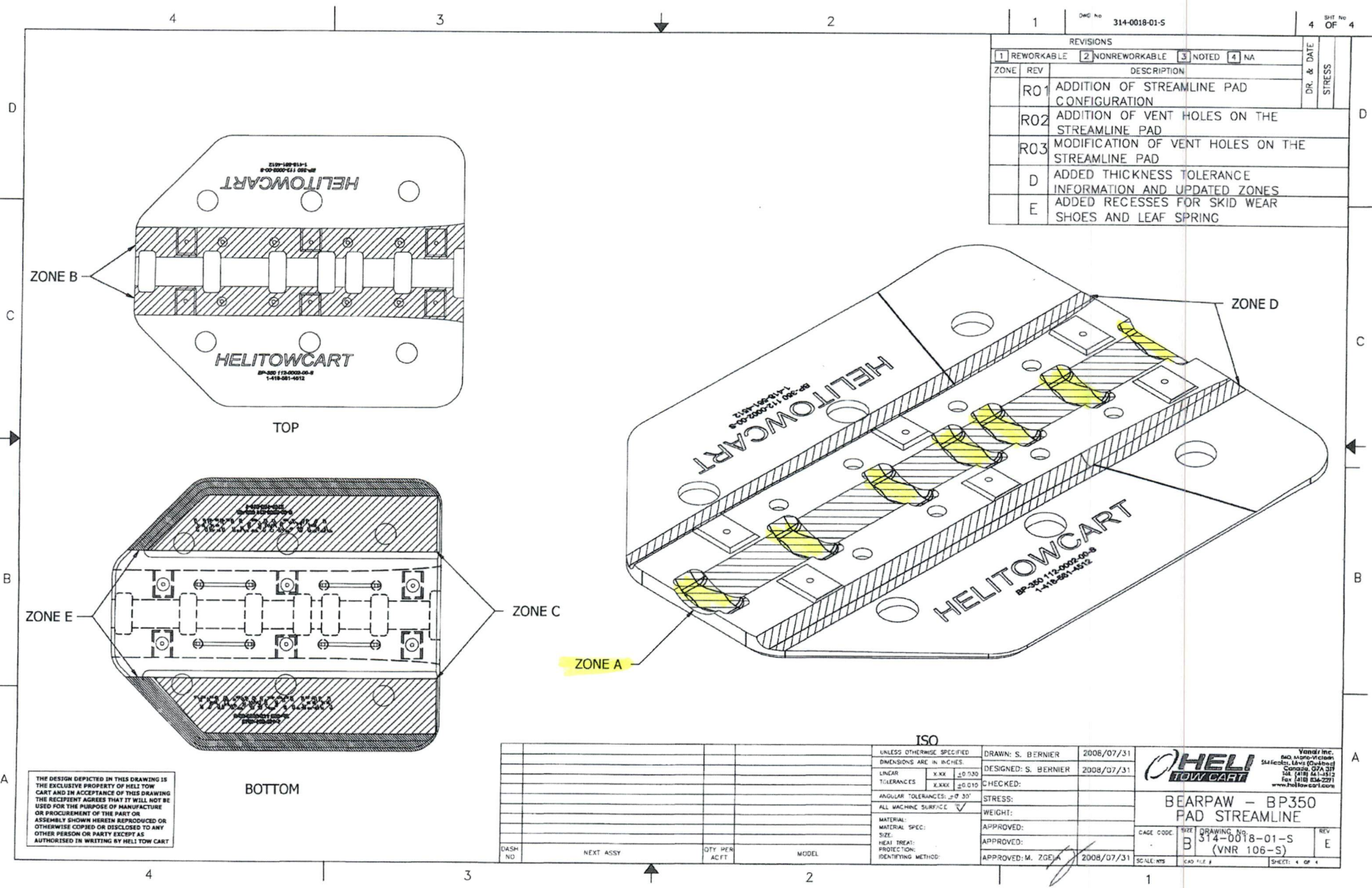
UNLESS OTHERWISE SPECIFIED	DRAWN: S. BERNIER	2008/07/31
DIMENSIONS ARE IN INCHES	DESIGNED: S. BERNIER	2008/07/31
LINE-IT	X.XX	±0.030
TOLERANCES	X.XXX	±0.010
ANGULAR TOLERANCES	±0° 30'	
ALL MACHINE SURFACE	✓	
MATERIAL:		
MATERIAL SPEC:		
SIZE:		
HEAT TREAT:		
PROTECTION:		
IDENTIFYING METHOD:		
APPROVED:		
APPROVED: M. ZGELA		2008/07/31

HELI TOW CART

314-0018-01-S
(VNR 106-S)

BEARPAW - BP350
PAD STREAMLINE

DATE: 2008/07/31
SCALE: NTS
SHEET: 2 OF 4



Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: Tuesday, May 31, 2016 3:02 PM
To: Nathalie Barbeau
Cc: Jean-Francois Lemire
Subject: BearPaws BP350

Bonjour Nathalie,

J'ai le plaisir de t'annoncer que je viens de te poster le package des BearPaws. Tu devrais recevoir le tout d'ici quelques jours.

N'hésite-pas à me contacter au besoin.

Renaud
renaud_br@hotmail.com

Trois-Rivières, 31 mai, 2016

Projet: A2007-09

Nathalie Barbeau
VP Commercial Affairs
Helitowcart (Vanair inc.)
877a Alphonse-Desrochers
St-Nicolas, Levis
Québec, Canada
G7A 5K6

Objet: STC SH06-24 Issue #4 - Wear Pad Recesses on BP350

Madame,

Vous trouverez ci-joint la documentation pour la mise à jour de la version 4 du certificat SH06-24 par l'ajout de dégagements sur les BP350 pour les wear pads selon votre PO # nb-160203-03.

En espérant le tout à votre entière satisfaction,

Sincèrement,



Renaud Berthelot-Richer, ing.

Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: 27 April 2016 13:57
To: Nathalie Barbeau
Subject: RE: Poids bearpaw

Salut,

Je mettrais une note disant que la différence est négligeable, mais je préfère ne pas mentionner le 0.24 lb pour éviter que les gens prennent cette valeur en compte dans leur weight and balance.

Renaud

De : Nathalie Barbeau [mailto:nbarbeau@helitowcart.com]
Envoyé : 2016/04/27 13:50
À : Renaud Berthelot-Richer
Objet : RE: Poids bearpaw

OK.
Peut-on mettre une petite note dans le tableau de weight & balance pour indiquer que la différence est de .24 lbs et négligeable et donc on l'aura à portée de main le jour que qq'un va me le demander et que je vais essayer de me souvenir de cela! ;) Merci.

Renaud: J'ai rejoint m. Boulé. Il est à la clinique médicale. Dès qu'il retournera chez lui il va réviser ce que je lui ai envoyé, va valider avec son personnel dans l'ouest canadien qui sont ceux qui s'étaient plaints le plus et va nous revenir rapidement. Je t'informe dès que j'ai des nouvelles.

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Tel: +1.418.561.4512 877A Alphonse-Desrochers
Fax: +1.418.836.4575 St-Nicolas, Levis, Qc
Canada, G7A 5K6

From: Renaud Berthelot-Richer [mailto:renaudb@ats-ast.com]
Sent: 27 April 2016 13:47
To: Nathalie Barbeau <nbarbeau@helitowcart.com>
Subject: Poids bearpaw

Salut Nathalie,

La modification allège de 0.24 lbs en tout, les deux bearpaws ensemble, ce qui est négligeable.

Renaud

Nathalie Barbeau

From: Nathalie Barbeau <nbarbeau@helitowcart.com>
Sent: 27 April 2016 13:50
To: 'Renaud Berthelot-Richer'
Subject: RE: Poids bearpaw

OK.
Peut-on mettre une petite note dans le tableau de weight & balance pour indiquer que la différence est de .24 lbs et négligeable et donc on l'aura à portée de main le jour que qq'un va me le demander et que je vais essayer de me souvenir de cela! ;) Merci.

Renaud: J'ai rejoint m. Boulé. Il est à la clinique médicale. Dès qu'il retournera chez lui il va réviser ce que je lui ai envoyé, va valider avec son personnel dans l'ouest canadien qui sont ceux qui s'étaient plaints le plus et va nous revenir rapidement. Je t'informe dès que j'ai des nouvelles.

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Tel: +1.418.561.4512 877A Alphonse-Desrochers
Fax: +1.418.836.4575 St-Nicolas, Levis, Qc
Canada, G7A 5K6

From: Renaud Berthelot-Richer [mailto:renaudb@ats-ast.com]
Sent: 27 April 2016 13:47
To: Nathalie Barbeau <nbarbeau@helitowcart.com>
Subject: Poids bearpaw

Salut Nathalie,

La modification allège de 0.24 lbs en tout, les deux bearpaws ensemble, ce qui est négligeable.

Renaud

Nathalie Barbeau

From: Simon Ebacher <SEbacher@canadianhelicopters.com>
Sent: 27 April 2016 10:18
To: Renaud Berthelot-Richer
Cc: CBoule@canadianhelicopters.com; Nathalie Barbeau
Subject: Re: Tolérances

Bon matin,

Ça me semble OK pour moi!

Bonne journée!

Simon Ebacher

Lead Hand Aircraft Maintenance Engineer

Canadian Helicopters Limited

Office 450-452-3000

Direct 450-452-3092

canadianhelicopters.com

From: "Renaud Berthelot-Richer" <renaudb@ats-ast.com>
To: "Simon Ebacher" <SEbacher@canadianhelicopters.com>, <CBoule@canadianhelicopters.com>
Cc: "Nathalie Barbeau" <nbarbeau@helitowcart.com>
Date: 27/04/2016 09:22 AM
Subject: Tolérances

Bonjour,

J'ai ajouté une page aux instructions d'installation afin de pouvoir réparer les bearpaws endommagés (voir pièce jointe), jusqu'à un certain point. Il n'est donc pas nécessaire de changer les tolérances. Est-ce que ça vous convient?

Renaud[attachment "Pad Recesses for Skid WEar Shoes and Leaf Spring.pdf" deleted by Simon Ebacher/Canadian Helicopters]

Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: 27 April 2016 09:21
To: Simon Ebacher; CBoule@canadianhelicopters.com
Cc: Nathalie Barbeau
Subject: Tolérances
Attachments: Pad Recesses for Skid WEar Shoes and Leaf Spring.pdf

Bonjour,

J'ai ajouté une page aux instructions d'installation afin de pouvoir réparer les bearpaws endommagés (voir pièce jointe), jusqu'à un certain point. Il n'est donc pas nécessaire de changer les tolérances. Est-ce que ça vous convient?

Renaud

échappées
pas en
no: sad

Pad Recesses for Skid Wear Shoes and Leaf Spring

The Bearpaw may be trimmed/machined to clear wear shoe mounting screws and skid leaf spring provided the recesses leave at least 0.500" thickness and provided that maximum lengths and widths of Figure 2 are not exceeded.

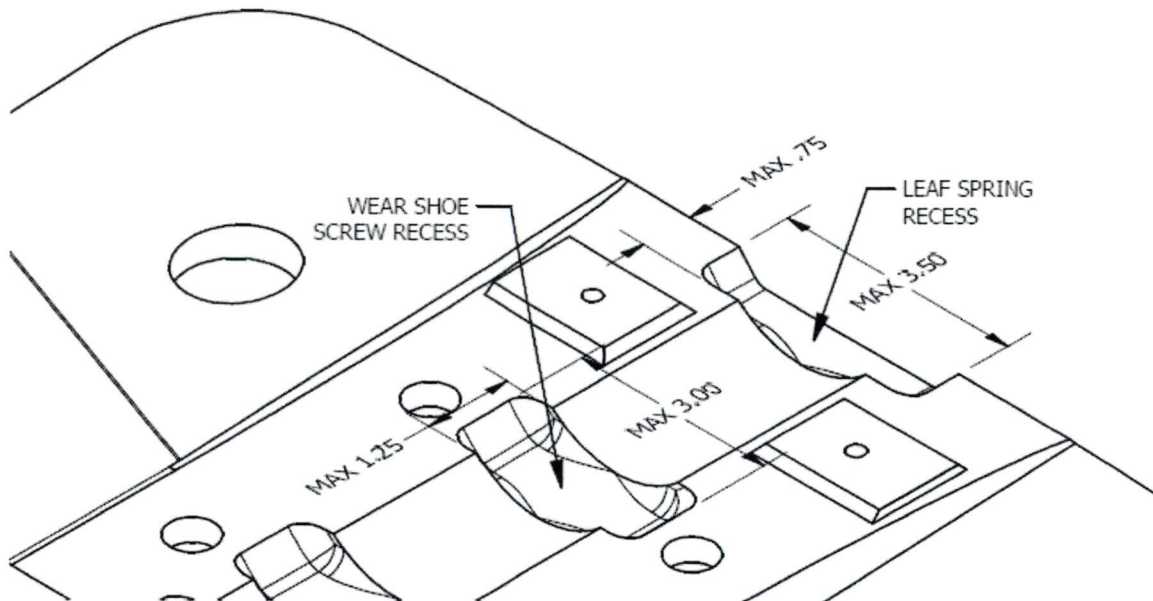


Figure 2 – Maximum Dimensions of Recesses

Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: 26 April 2016 15:03
To: Nathalie Barbeau
Subject: Page du manuel de Dart
Attachments: page de Dart.pdf

Bonjour Nathalie,

Voir ci-joint la page du manuel d'installation de Dart dont je me suis inspiré pour ajouter la phrase dans les instructions d'installation.

Renaud

- 3.2.4 Lower the aircraft.
- 3.2.5 Update the aircraft log book to indicate installation of the D350-578-015/-017 Bearpaw Kit and adjust the empty weight and balance record for the rotorcraft with the information given in section 4.0

3.3 D350-578-031 WEARPLATE INSTALLATION

- 3.3.1 Customers with old style bearpaws will need to re-work the counterbore on the bottom of the bearpaws as shown in Figure 6 and 7.
- 3.3.2 Otherwise, the D350-578-031 wearplate kit should be installed with the bearpaws as outlined in Section 3.5 or 3.6 of these Installation Instructions.

3.4 MODIFIED INSTALLATION (ALTERNATE CENTER CLAMP LOCATION)

Note: not compatible with D350-578-031 Wearplate Kit.

- 3.4.1 Drill and counterbore Bearpaw at center clamp location as shown in Figure 8.
- 3.4.2 Jack up the aircraft. Ensure the skidtubes are serviceable.
- 3.4.3 Position the D2432F/-3 (D350-578-011/-015) or D4297-1/-3 (D350-578-013/-017) or D2672F (D350-578-021) Bearpaw on the aft end of each skidtube as shown in Figure 8.
- 3.4.4 Install the D4011-1 clamps with the hardware as shown in Figure 3 or 5 as applicable. Although not generally necessary, it is also acceptable to replace the AN4-XXA bolts with longer or shorter AN4 bolts, if required
CAUTION: The torque on the nuts should be limited to 20 in-lb (2.3 Nm).
- 3.4.5 The Bearpaw may be relieved to clear wearshoe mounting screws provided the relief leaves 0.375" (9.53mm) thickness.
- 3.4.6 Lower the aircraft.
- 3.4.7 Update the aircraft log book to indicate installation of the D350-578-XXX Bearpaw and adjust the empty weight and balance record for the rotorcraft with the information given in section 4.0

3.5 D350-578-111/-113/-121 BEARPAW INSTALLATION

- 3.5.1 Jack up the aircraft. Ensure the skidtubes are serviceable.
- 3.5.2 If the Bearpaws are being installed on Dart Skidtubes remove the D3537-1 or D2648-1 Wearpads prior to installing the Bearpaws. It is not necessary to remove the Dart Wearplates and gaskets. Re-install attachment hardware into open inserts.
- 3.5.3 Align the D3859-041 Wearplate with the holes in the bottom of the bearpaw.
- 3.5.4 Position the D2432F (D350-578-011/-111) or D4297-1 (D350-578-013/-113) or D2672F (D350-578-021/-121) Bearpaw with D3859-041 Wearplate on the aft end of each skidtube as shown in Figure 2.

Nathalie Barbeau

From: Simon Ebacher <SEbacher@canadianhelicopters.com>
Sent: 26 April 2016 12:30
To: Renaud Berthelot-Richer
Cc: Claude Boule; Nathalie Barbeau
Subject: Re: Concept BearPaw pour boulons Wear Pads

Salut Renaud,

Merci encore pour ton temps et ta patience envers nous demandes!!!

Je crois que l'on devrait augmenter les limites des dommages quand même car elles seront prises en considération lors de l'inspection des bearpaws en service actuellement dans notre flotte et la flotte des autres compagnies. L'augmentation de ces tolérances, par contre, devrait seulement s'appliquer pour les bearpaws conçus AVANT cette modification car le nouveau concept autorisera, je suppose, moins de dommages puisqu'il y aura moins de matériel à ces endroits.

Aussi, je garderais dans vos instructions, tous les modèles (avec pockets, streamline et ce nouveau concept) pour faciliter les inspections.

Si ce n'est pas clair, lâches moi un coup de fil!! Ce n'est pas toujours évident d'expliquer par écrit!!

Donnes nous des news!

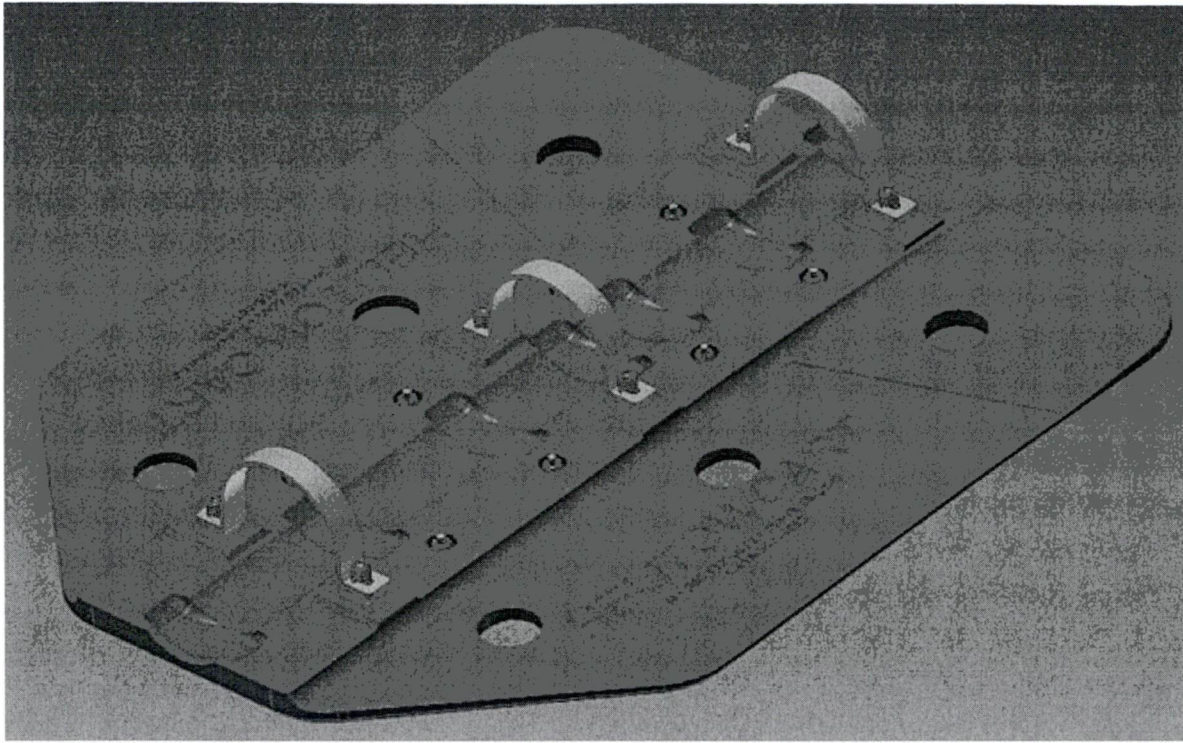
Simon Ebacher
Lead Hand Aircraft Maintenance Engineer

Canadian Helicopters Limited
Office 450-452-3000
Direct 450-452-3092
canadianhelicopters.com

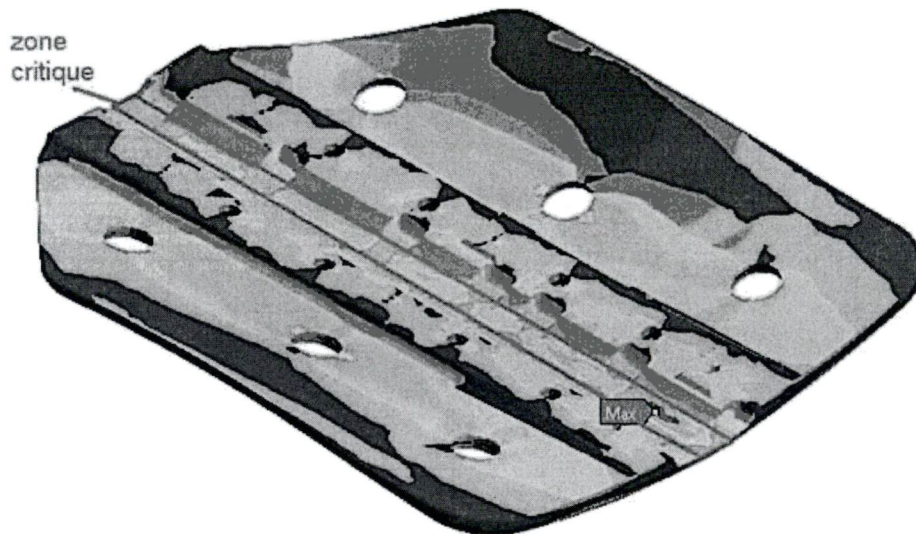
From: "Renaud Berthelot-Richer" <renaudb@ats-ast.com>
To: <CBoule@canadianhelicopters.com>
Cc: "Nathalie Barbeau" <nbarbeau@helitowcart.com>, "Simon Ebacher" <SEbacher@canadianhelicopters.com>
Date: 26/04/2016 12:06 PM
Subject: Concept BearPaw pour boulons Wear Pads

Bonjour Claude,

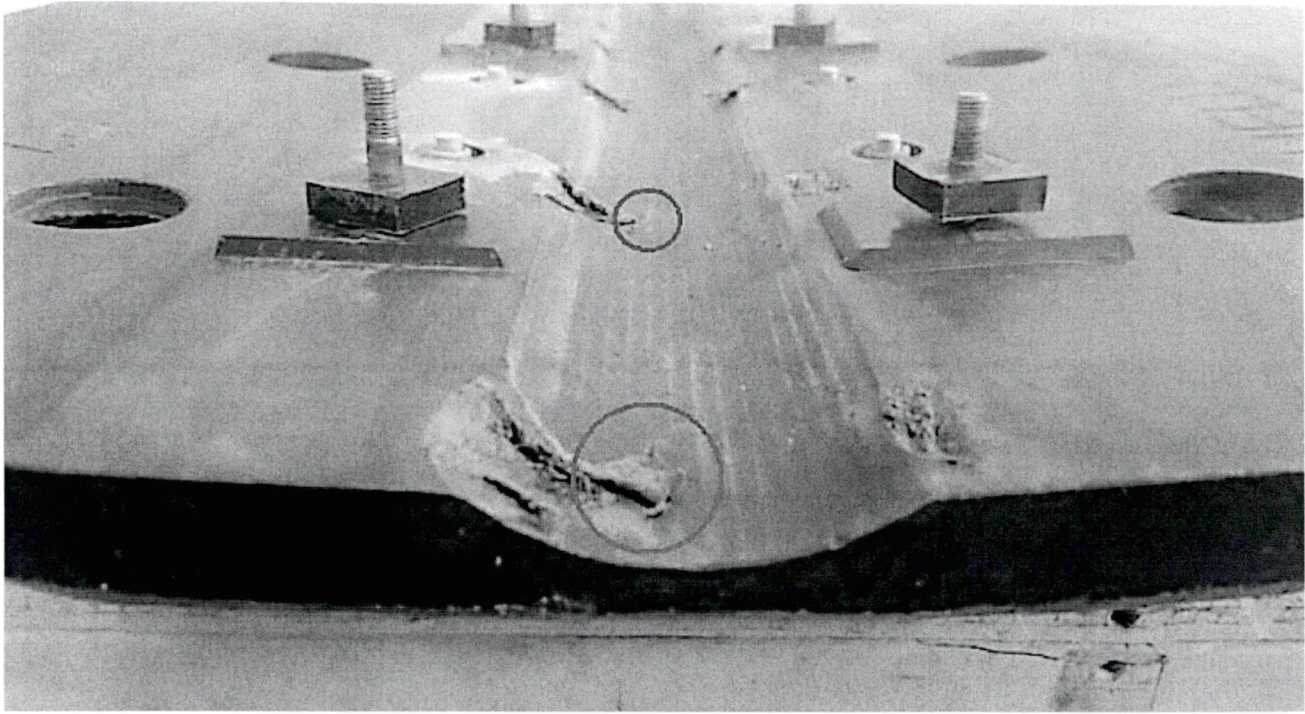
J'ai travaillé étroitement avec Simon Ebacher pour la conception des BearPaws mais j'ai oublié de vous tenir informé. Voir ci-dessous le concept retenu. Ce concept permet au bearpaw de tourner jusqu'à 12.5 degrés avant qu'il y ait une interférence avec les têtes de boulons de wearpads (Dart). De plus, le bearpaw peut reculer de 0.5 pouce avant que les têtes de boulons ou le leaf spring du skid ne causent de dommage au bearpaw. Vous trouverez en pièce jointe deux pages des instructions d'installation. J'ai mis à jour les zones de tolérance, mais je n'ai pas changé les valeurs des tolérances puisque les dégagements du nouveau concept devraient éviter les dommages. Êtes-vous satisfait de ce concept ?



Merci beaucoup pour les photos, elles m'ont aidé à réaliser l'importance de permettre au bearpaw de tourner d'un angle raisonnable. En ce qui concerne la zone critique, elle est au centre du rond du skid (voir le Max en rouge sur la figure ci-dessous).



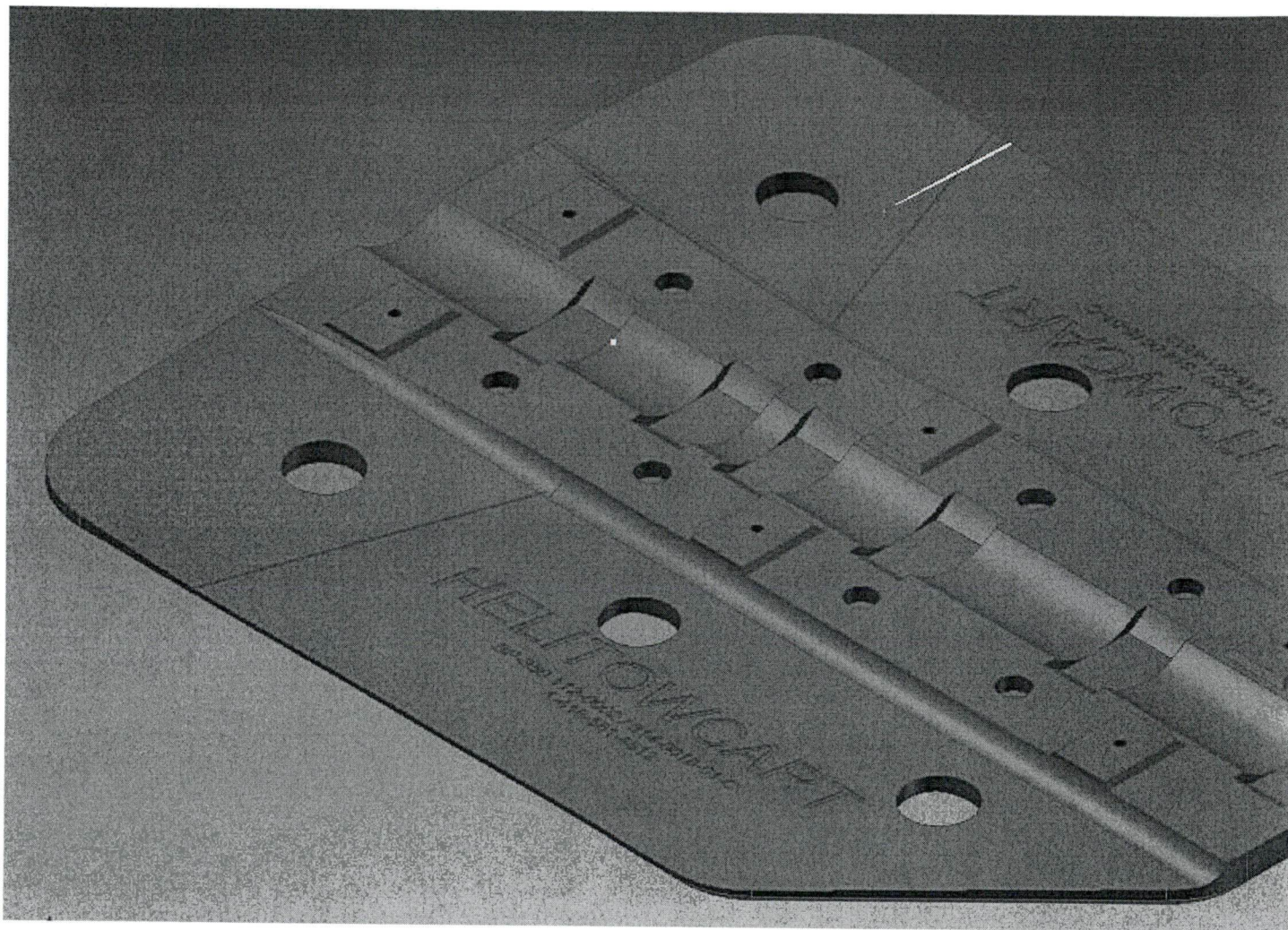
Certains des dommages présentés sont situés dans cette zone. Avez-vous plusieurs bearpaw endommagés à ce point ? Si l'épaisseur minimale au centre du bearpaw n'est pas affectée, il y a peut-être quelque chose à faire, mais il faudrait y regarder de plus près.



Renaud[attachment "oledata.mso" deleted by Simon Ebacher/Canadian Helicopters] [attachment "image002.png" deleted by Simon Ebacher/Canadian Helicopters] [attachment "image004.png" deleted by Simon Ebacher/Canadian Helicopters] [attachment "314-0020-00-E DRAFT (Tolerances).pdf" deleted by Simon Ebacher/Canadian Helicopters]

Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: 20 April 2016 16:54
To: Nathalie Barbeau
Subject: prise 3



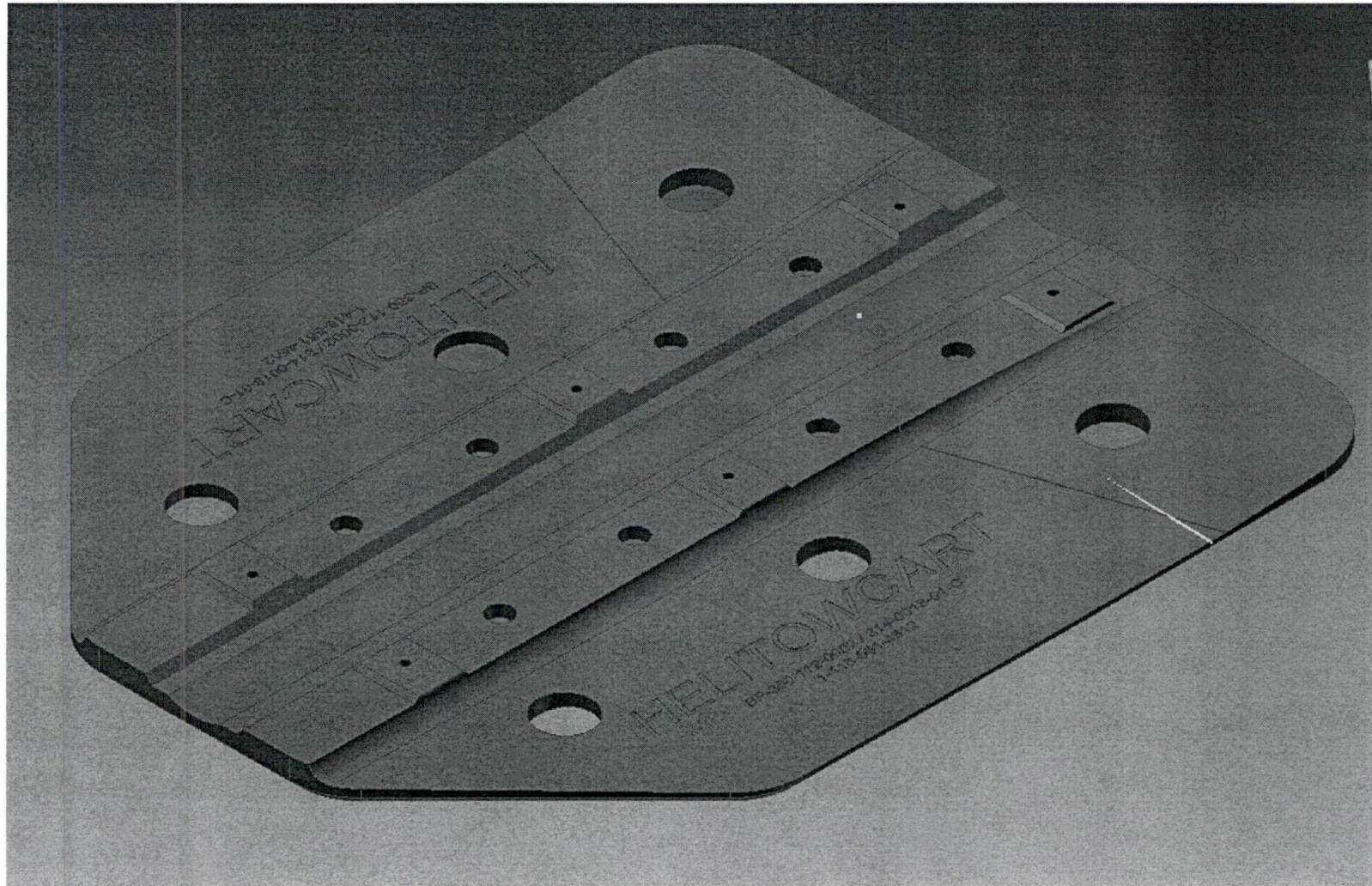
Modification des BP-350 pour les wear pads de Dart

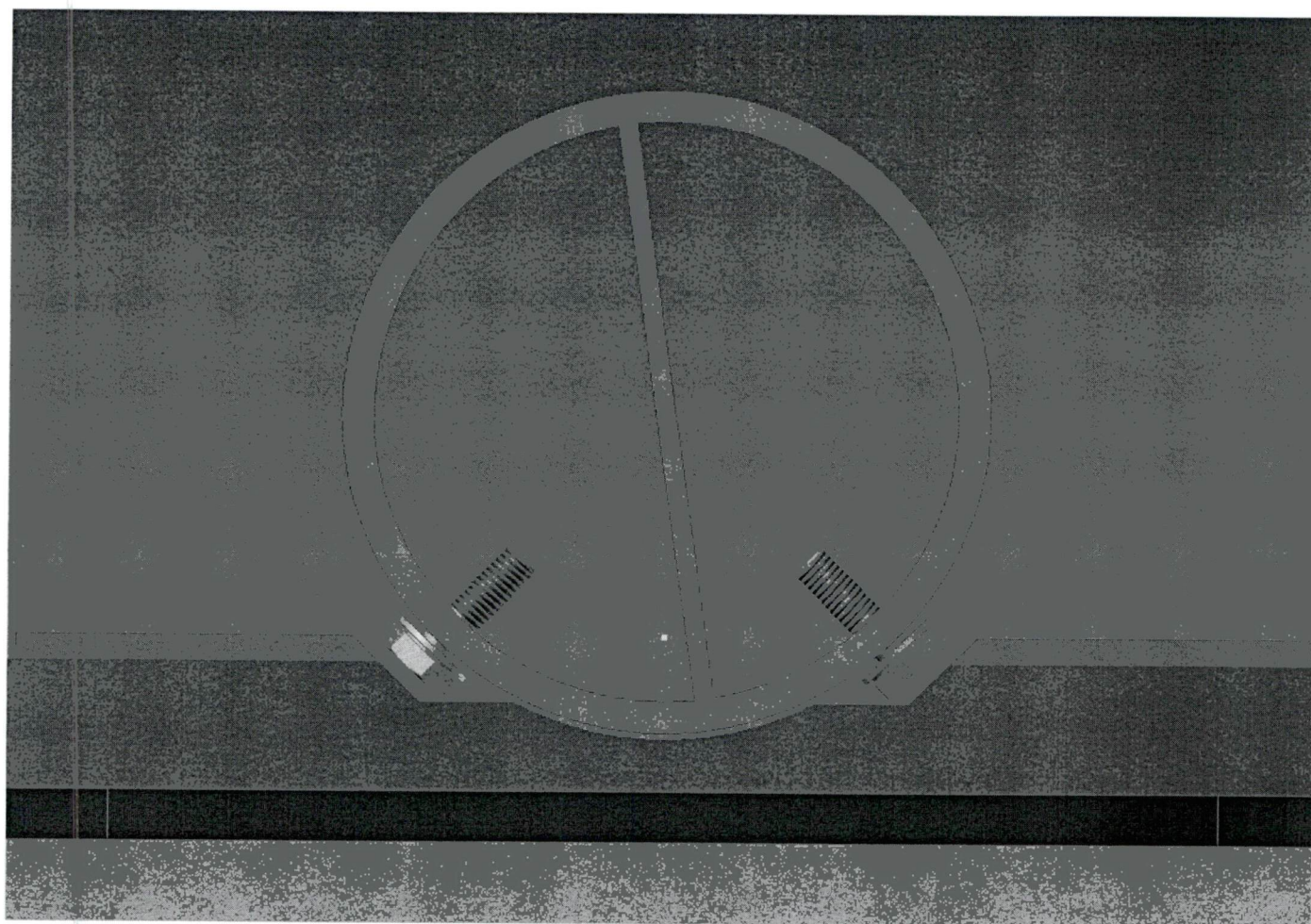
Suivi de conception

Ben Renaud

Concept 1

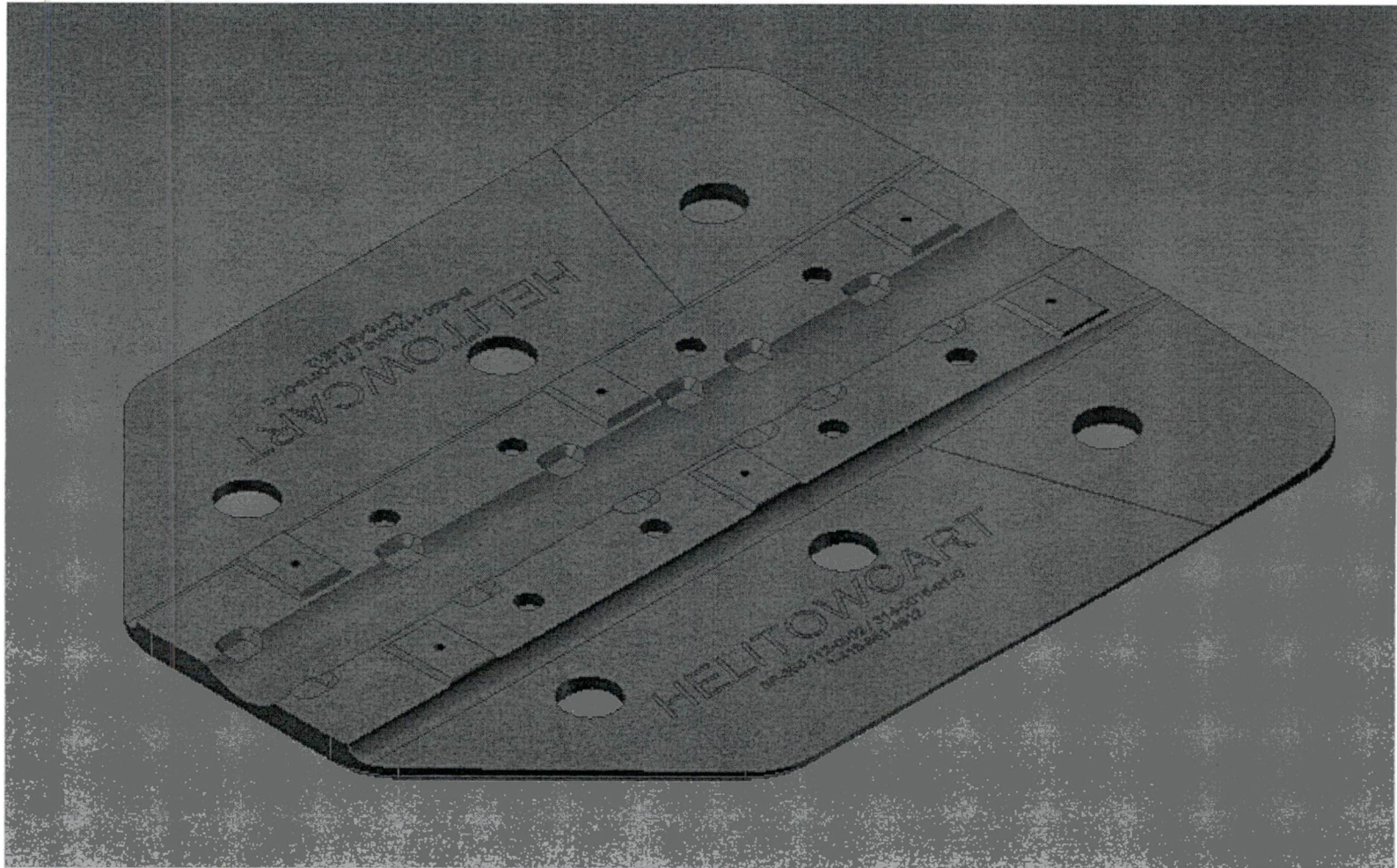
Chanfrein sur toute la longueur





Concept 2

Chanfreins locaux



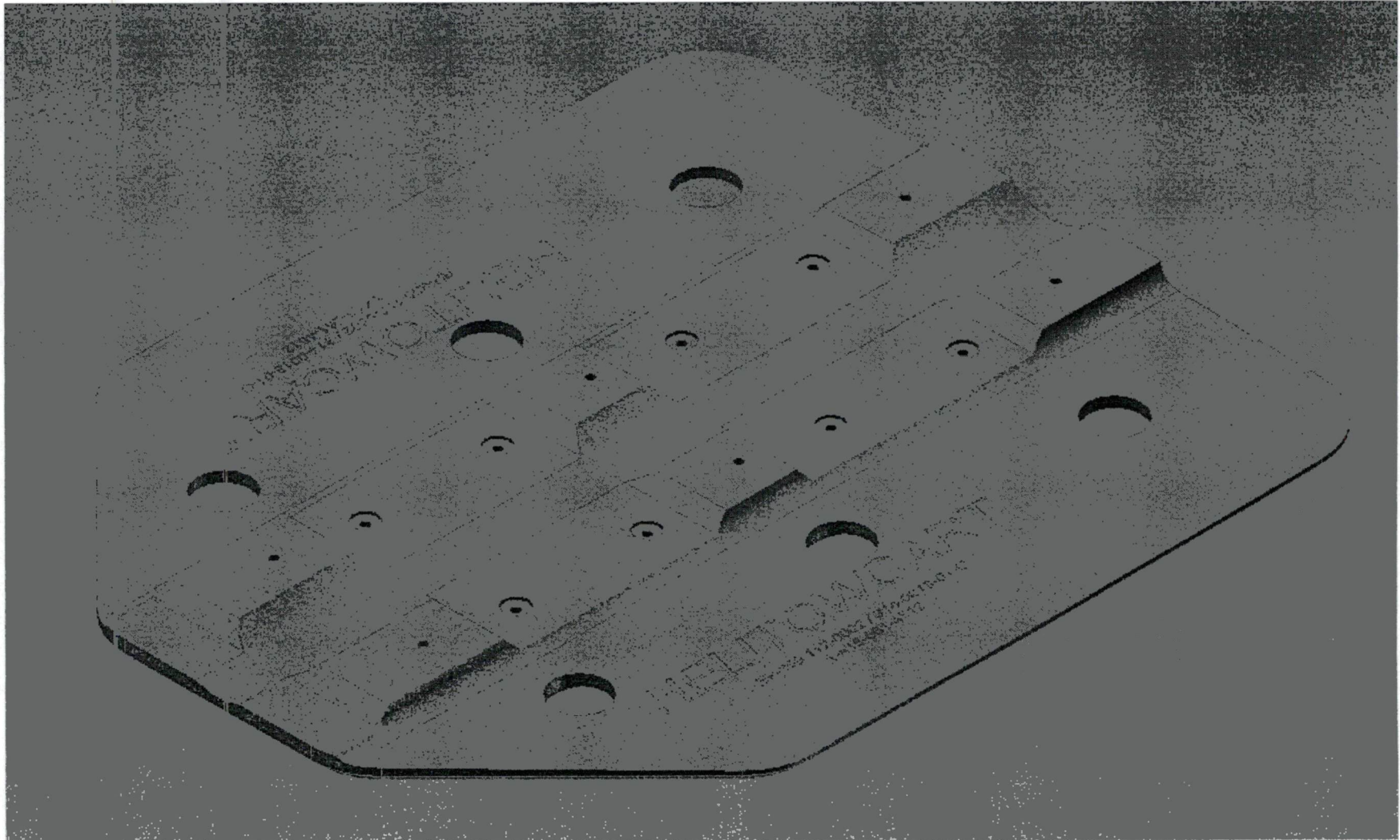
Concept 3

Chanfrein partiel (concept proposé)



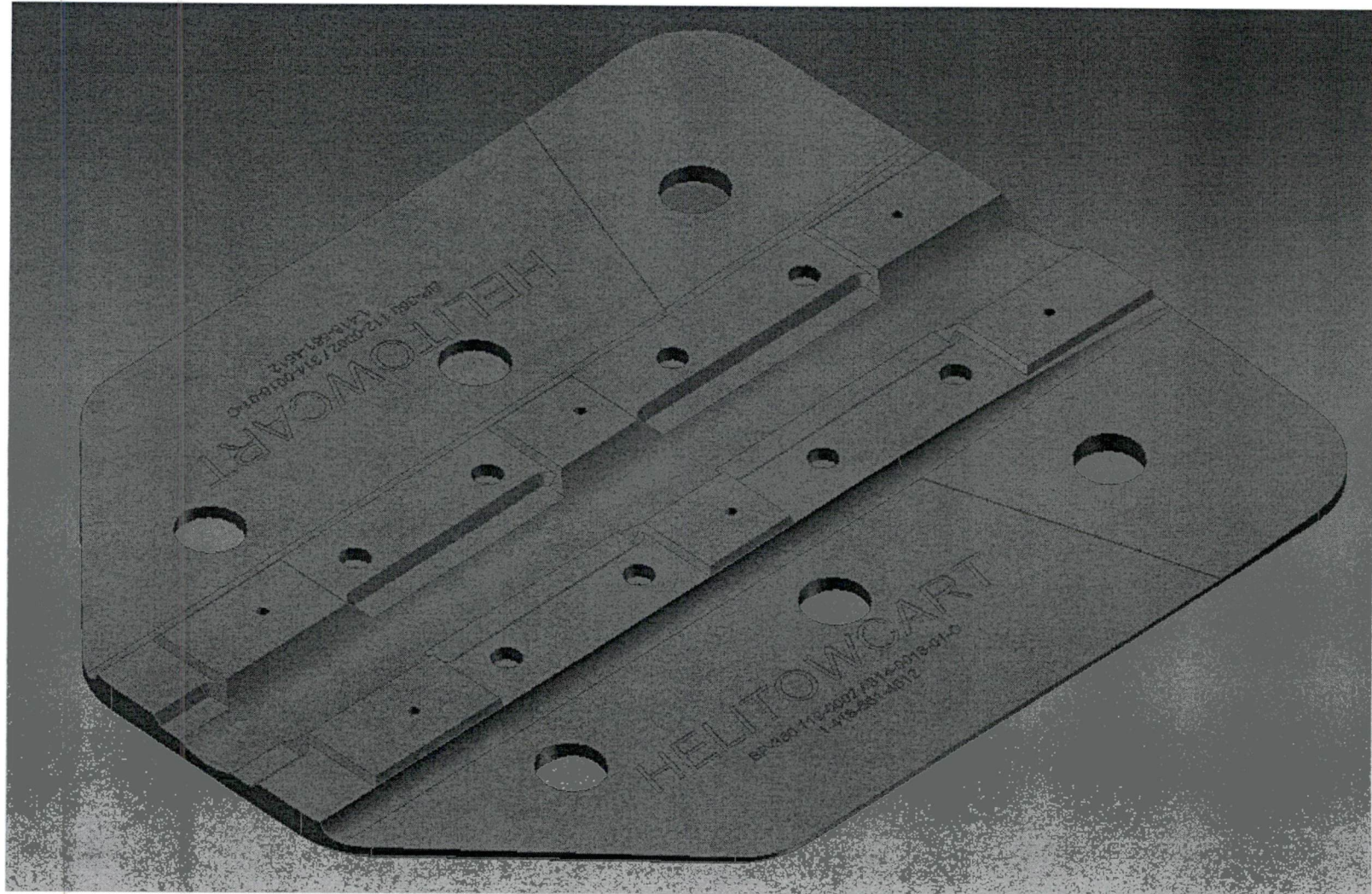
Concept 4

Modification du design (plus complexe à mettre en oeuvre)



Concept 5

Modification au design (plus complexe à mettre en oeuvre)



Nathalie Barbeau

From: Claude Boule <CBoule@canadianhelicopters.com>
Sent: 20 April 2016 13:42
To: nbarbeau@helitowcart.com
Cc: Thorsten Carlsen
Subject: AS350 bearpaws steamline
Attachments: 20160308_154621.jpg; 20160308_154700.jpg; 20160308_154716.jpg

Bonjour

Nous avons distribué le bulletin pour faire ses dégagements pour le bolts des skid tubes et nous nous sommes aperçues que beaucoup de ces bearpaws on déjà des "gooves", qui dépassent largement les limites du ICA.

Vue que ces dommages n'affecte pas l'intégrité du bearpaw donc il ne devrait pas avoir aucune limite dans ces régions affecté, les dommages devraient être adouci seulement sans toutefois passé à travers du bearpaw.

Ci-joint quelques photos.

(Prenez note que je suis présentement en congé de maladie due à une opération, mais je prend mes courriers)

merci

Claude Boule

Aircraft Standards Manager Superviseur des Standards en Aéronef

Canadian Helicopters Limited

Office 450-452-3000

Direct 450-452-3025

Mobile 514-229-6190

Facsimile 450-452-2483

canadianhelicopters.com

----- Forwarded by Claude Boule/Canadian Helicopters on 20/04/2016 01:29 PM -----

From: Thorsten Carlsen/Canadian Helicopters
To: Claude Boule/Canadian Helicopters@HNZ
Date: 09/03/2016 01:10 PM
Subject: Fw: Hvd bearpaws

Hi Claude please see below , left you a message on this would like to discuss as well do we have the final for the new AS350 engine inlet cover that covers the fdc bypass opening i,m getting lots calls for these thanks.

Thorsten Carlsen
Chief Engineer Western Canada Airbus/Turbomeca

Canadian Helicopters Limited
Direct 1-780-429-6902
Mobile 1-780-777-2580
Facsimile 1-780-429-6917
canadianhelicopters.com

----- Forwarded by Thorsten Carlsen/Canadian Helicopters on 03/09/2016 11:05 AM -----

From: Josh Mayer/Canadian Helicopters
To: Thorsten Carlsen/Canadian Helicopters@HNZ
Date: 03/08/2016 05:59 PM
Subject: Fw: Hvd bearpaws

Hey Thor,

Here are the pictures of the bearpaws. As I said over the phone, I first assumed they were streamline paws, but there is no "-S" designation in the part number as well as the optional equipment list says the normal Helitowcart (HTC) paws are in and the streamline ones are out. Now the MMA states that if the streamline paws are not installed that no action is required which seems silly to me since the normal HTC paws have the same kind of wear.

I plan to at the least dress out the damage. I want to know for the paperwork sake if I am filling out the MMA as complied with on these paws, OR if I sign out the MMA as N/A and make a separate log entry for dressing out the damage.

I await your opinion... Talk to you tomorrow.

Josh Mayer

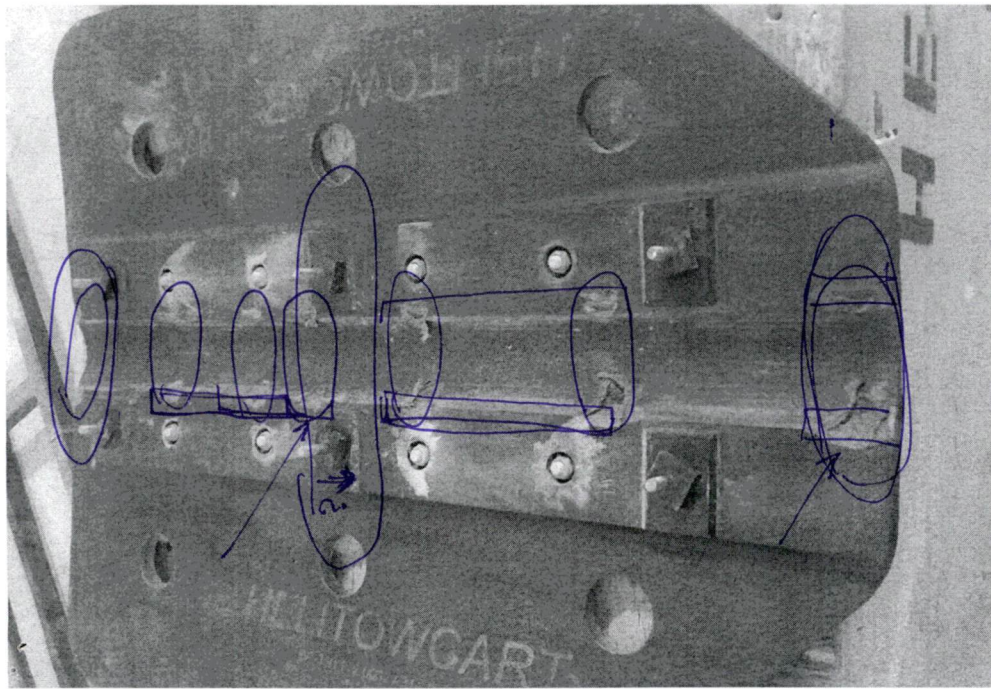
Canadian Helicopters Limited
canadianhelicopters.com

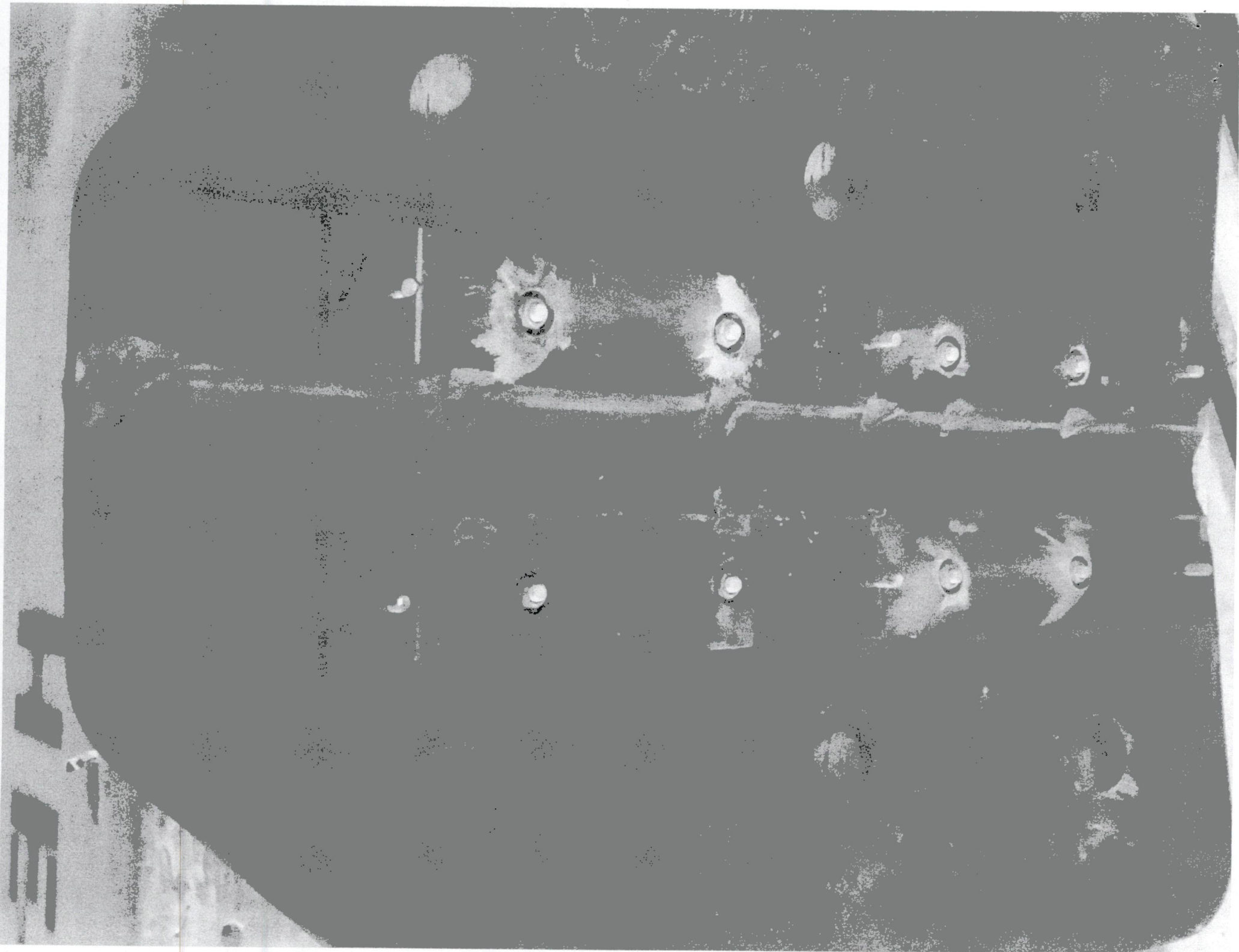
-----Forwarded by Josh Mayer/Canadian Helicopters on 03/08/2016 05:50PM -----

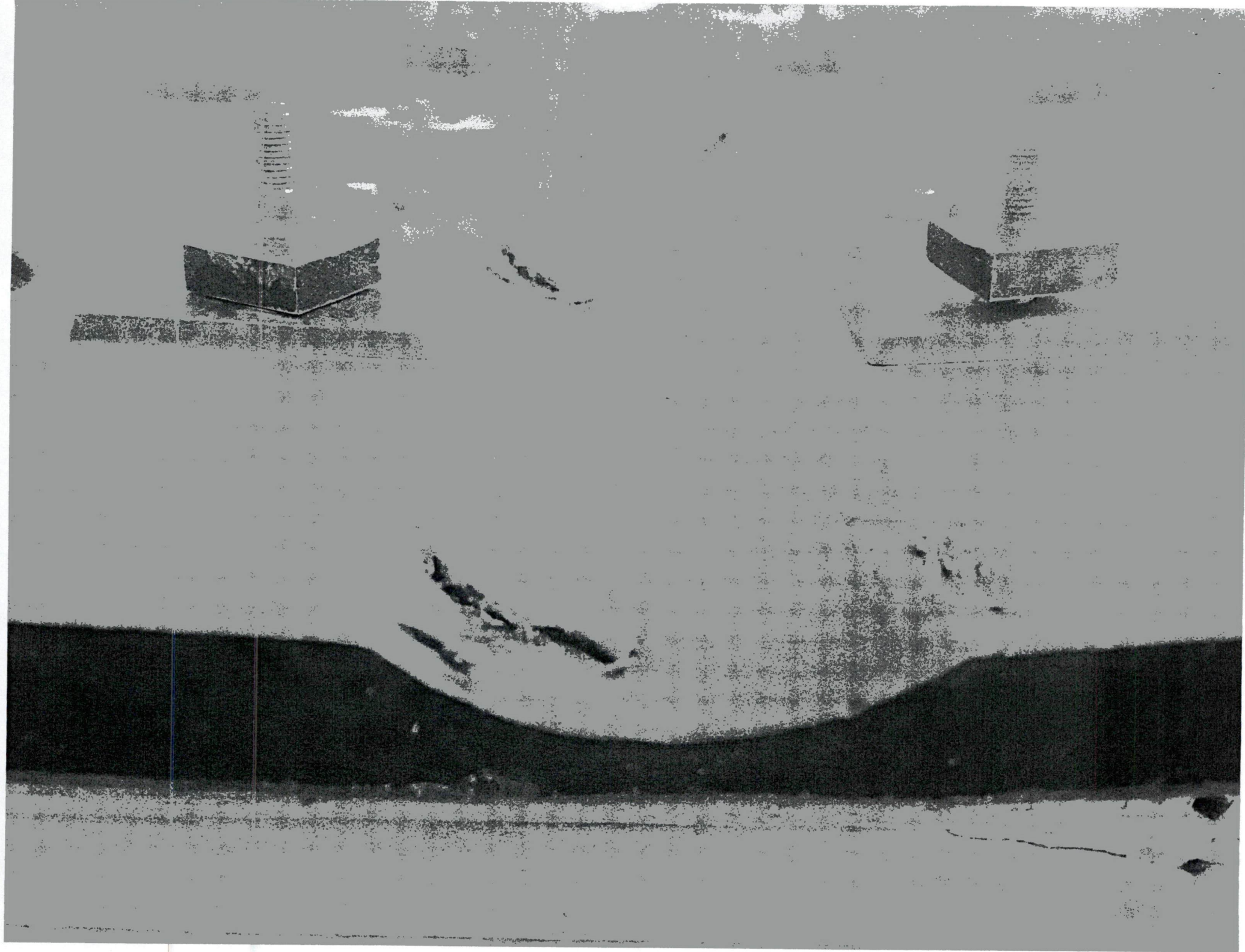
To: jmayer@hnz.com
From: Joshua Mayer <joshua.tagni@gmail.com>
Date: 03/08/2016 05:13PM
Subject: Hvd bearpaws

(See attached file: 20160308_154621.jpg)
(See attached file: 20160308_154700.jpg)
(See attached file: 20160308_154716.jpg)

Scenario 3









Nathalie Barbeau

From: Simon Ebacher <SEbacher@canadianhelicopters.com>
Sent: 20 April 2016 11:16
To: Renaud Berthelot-Richer
Cc: Nathalie Barbeau
Subject: Re: Concept BearPaw

Salut Renaud,

Après notre brainstorm au sujet de tes modification, voici ce que l'on vous proposerait:

Premièrement, on n'est pas chaud à l'idée de couper le wearshoe pour diverses raisons:

- Il faut altérer un autre kit pour devoir installer le bearpaws Helitowcart (nous ne devrions pas avoir à modifier quoi que se soit pour faire l'installation...)
- Si, pour une raison d'opération ou autre, nous devons enlever les bearpaws, le skid tube ne serait pas protégé..... il faudrait acheter un wear shoe et un rubber. (et aussi le savoir d'avance car avec le type d'opération que les compagnies d'hélico ont, les configuration de vol peuvent changée très rapidement avec des délais de moins de 24h...)
- Il y a aussi un risque que quelque chose (une roche par exemple) se glisse entre le skid tube et le bearpaws et endommage le skid tube.... les wear shoes et le rubber aide à prévenir ces dommages.

Voici ce que l'on vous propose:

- raccourcir le bearpaws à l'avant, tel que discuté, pour ne plus avoir d'interférence avec le premier boulon serait une bonne solution.
- Le concept 3 serait notre choix mais il faudrait augmenter les limites d'usures de cette région. Les limites de Dart sont de 0.375" (épaisseur de matériel total) tandis que ceux d'Hélitowcart sont de 0.250" (épaisseur maximum d'usure). Voir snip de l'ICA de Dart :

3.4.5 The Bearpaw may be relieved to clear wearshoe mounting sc 0.375" (9.53mm) thickness.

Table 5 – Tolerances for Crack

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)
A	0,50	0,050
B	1,000	0,250

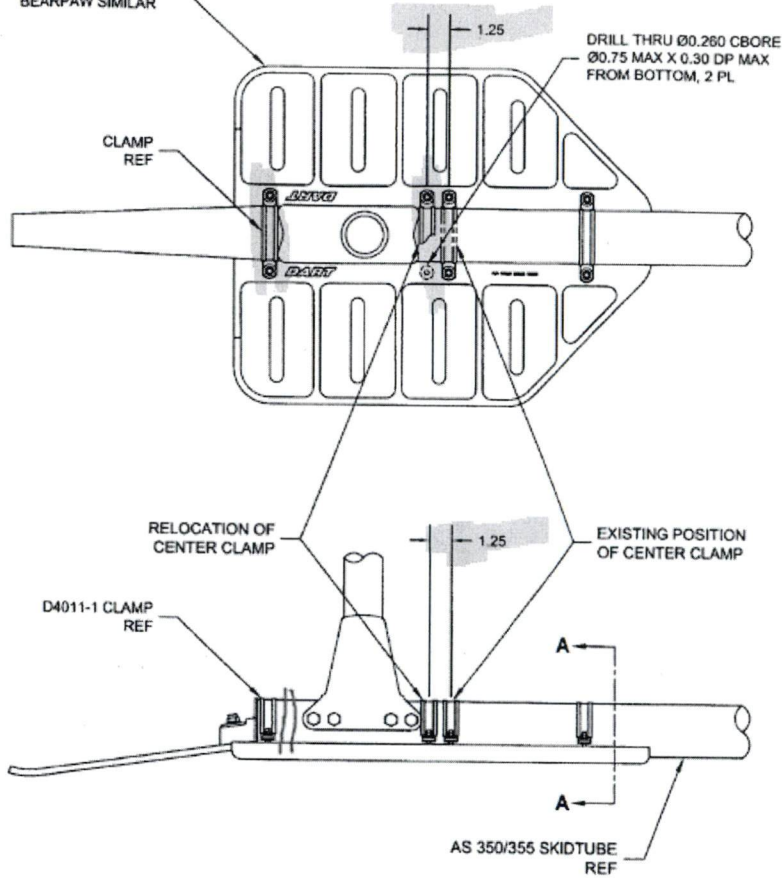
Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Sai
www.helitowcart.com info@he

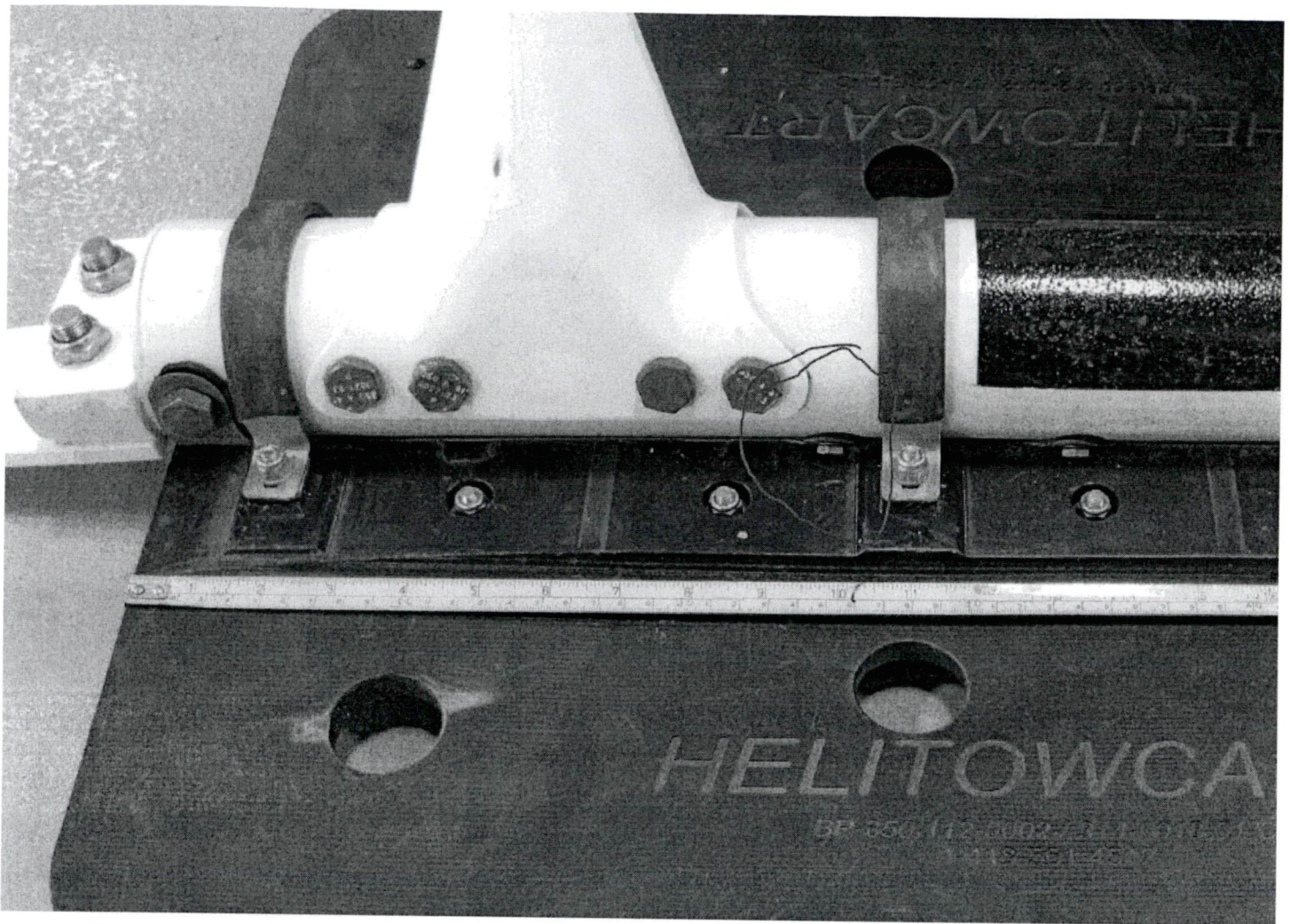
- Autre solution, remplacer les boulons des wear shoes en interférence avec des vis (ex.: MS27039-1-XX ou AN525-XXX) ... les têtes de vis sont rondes donc elle causeront moins de dommages au bearpaws. Les vis MS27039 on une tête un peu plus grosse que les AN525 mais seront plus facile à enlever si requis après quelques années en service!

Petites modifications qui pourraient être apportées au design:

- Ajouter un "recess" à l'arrière du bearpaws pour éviter l'usure avec la spring blade du skid tube (on en a déjà discuté).
- Avoir la possibilité, comme ceux de Dart, de déplacer la clamp du milieu afin de prévenir le mouvement avant / arrière du bearpaws. Par contre, il faudrait modifier les blocs du centre afin de ne pas avoir trop d'interférence avec la bolt du wearshoe qui est directement situé à cette endroit (voir photo plus bas)

D2432F BEARPAW SHOWN
D2432-3/D2672F/D4297-1/-3
BEARPAW SIMILAR





J'espère que ça peut vous aider!!

On s'en reparle plus tard aujourd'hui,

Bonne journée!

Simon Ebacher

Lead Hand Aircraft Maintenance Engineer

Canadian Helicopters Limited

Office 450-452-3000

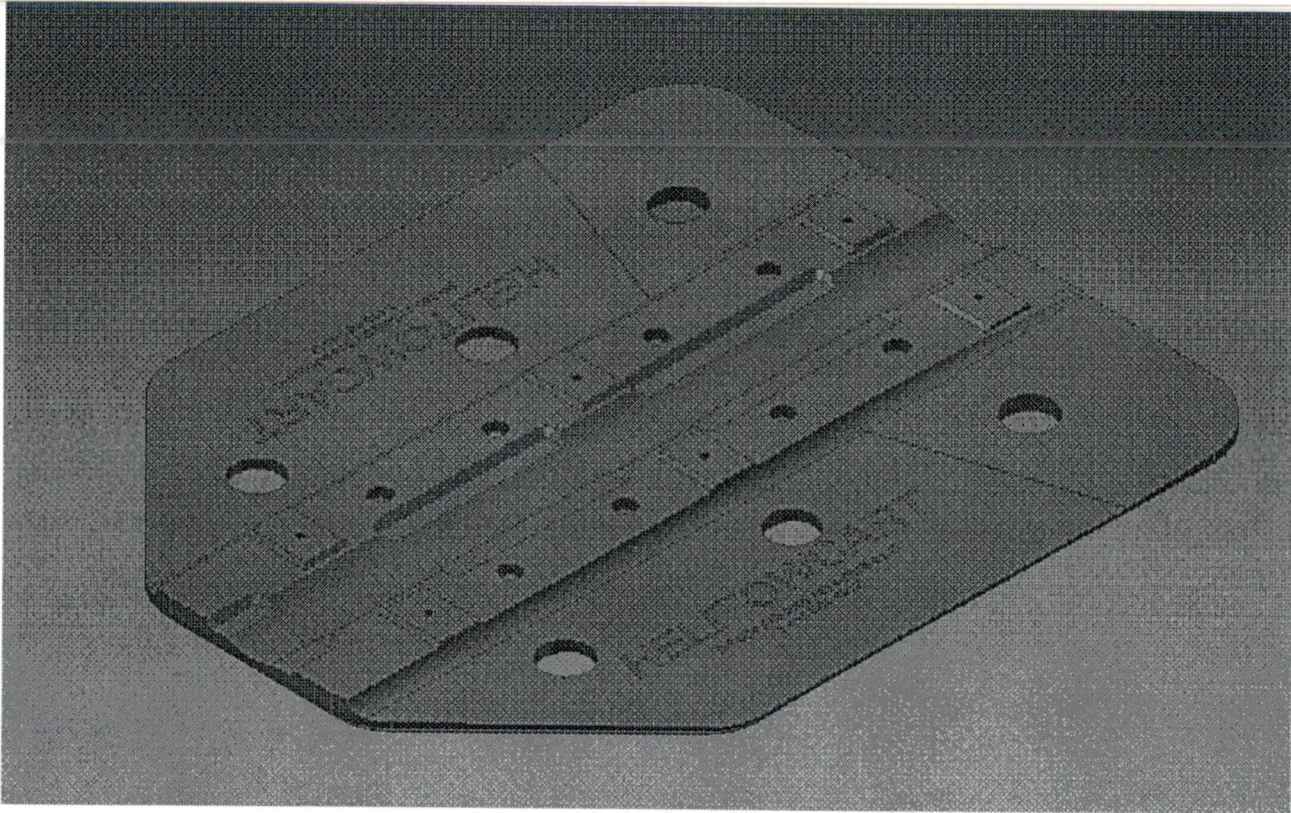
Direct 450-452-3092

canadianhelicopters.com

From: "Renaud Berthelot-Richer" <renaudb@ats-ast.com>
To: "Simon Ebacher" <SEbacher@canadianhelicopters.com>
Cc: "Nathalie Barbeau" <nbarbeau@helitowcart.com>
Date: 20/04/2016 09:36 AM
Subject: Concept BearPaw

Bonjour Simon,

J'ai regardé différents concepts pour dégager la tête des boulons de wearpads. Voici celui qui est ressorti :



Néanmoins, puisque les bearpaws tournent, il y aura toujours des dommages causés par les têtes de boulons. L'approche que nous préconisons est donc la suivante :

Racourcir le bearpaw de 1.5 pouce en avant

Couper le wearpad de Dart en ne gardant que les deux premières séries de boulons.

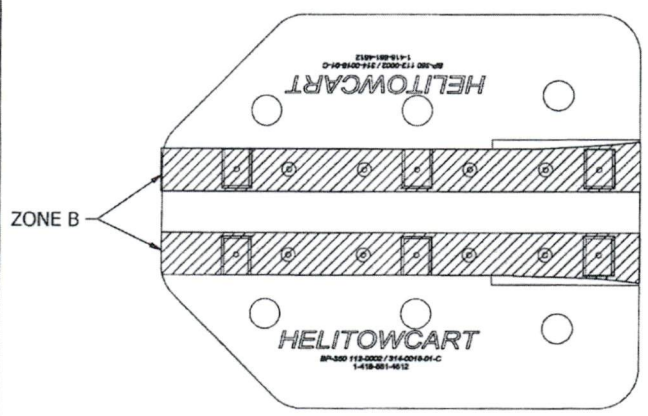
Boucher les trous de boulons avec des bouchons en plastique, ou un autre moyen (à déterminer)

Je t'appelle pour en discuter.

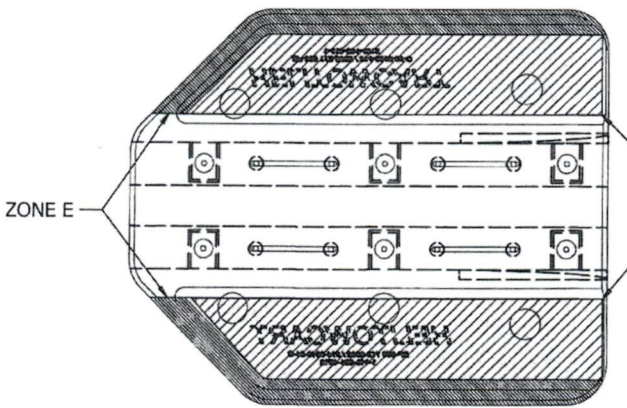
Renaud

2016 02 03
 RENSUD,
 VOICI CE QUE JE
 SUGGÈRE:

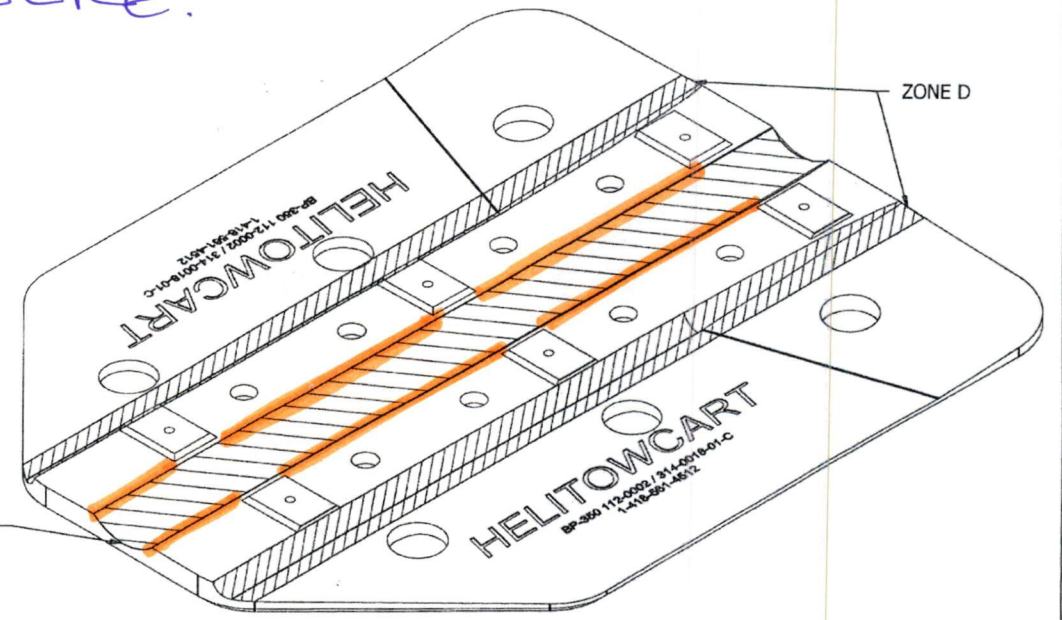
1		E No 314-0018-01-S		3		Srl No OF 3	
REVISIONS						DATE	STRESS
1	REWORKABLE	2	NONREWORKABLE	3	NOTED		
ZONE	REV	DESCRIPTION				DR. & DATE	STRESS
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION					
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD					
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD					
	D	ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES					



TOP





BOTTOM



ISO

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

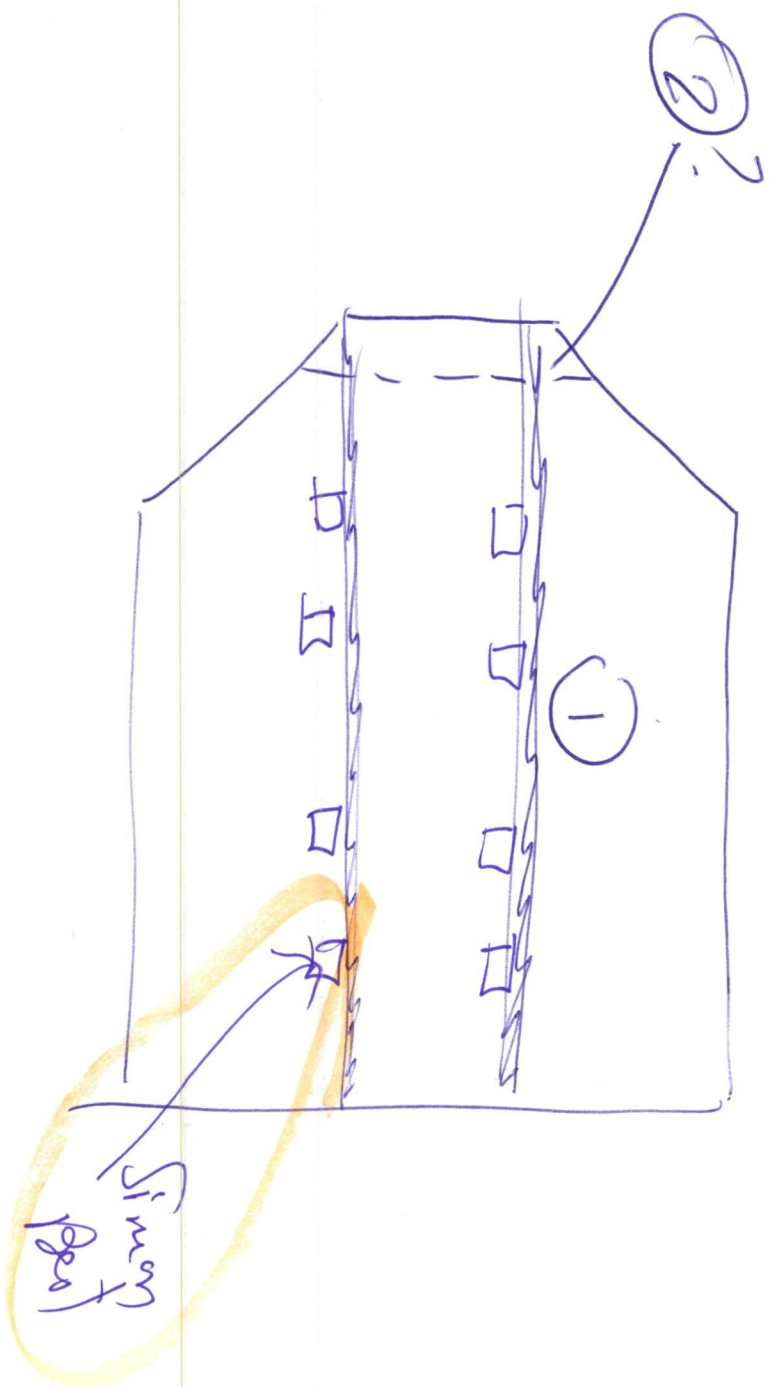
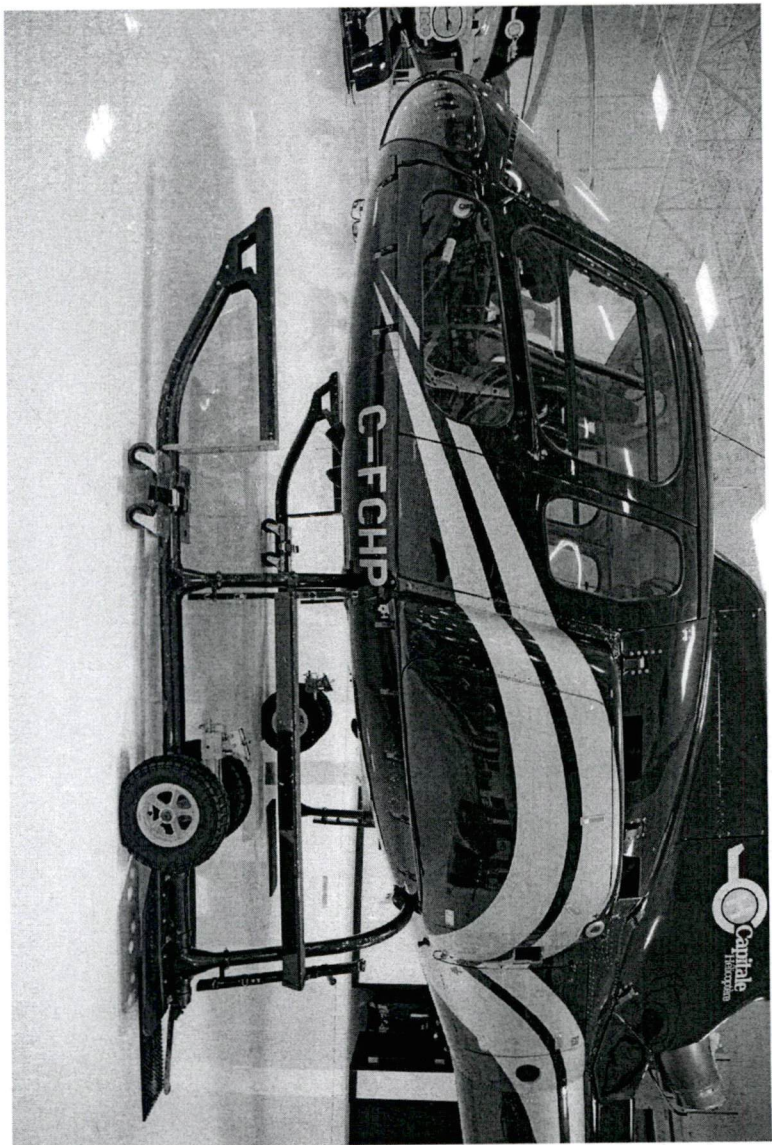
				UNLESS OTHERWISE SPECIFIED:		DRAWN: S. BERNIER		2008/07/31		 <div>Venturi Inc. Rtd. 14000-Victoria Delta BC V4N 1G4 Canada: 674.379 Tel: (604) 541-1111 Fax: (604) 546-2971 www.helilow-carb.com</div>	
				DIMENSIONS ARE IN INCHES		DESIGNED: S. BERNIER		2008/07/31			
				LINEAR TOLERANCES		XXX ±0.030		CHECKED:			
				ANGULAR TOLERANCES		XXX ±0.015		STRESS:			
				ALL MACHINE SURFACE		✓		WEIGHT:		BEARPAW – BP350 PAD STREAMLINE	
				MATERIAL:				APPROVED:			
				MATERIAL SPEC:				APPROVED:			
				SIZE:				APPROVED: M. ZGELA			
				HEAT TREAT:				2008/07/31		CAGE CODE: SIZE B DRAWING: 314-0018-01-S REV D (VNR 106-S) SCALE: NTS 1:100 L&S 1:100 SH&E: 3 OF 3	
				PROTECTING METHOD:							
DASH NO		NEXT ASSY		QTY PER ASST		MODEL					

17:00  2016 02 05

Tel de Renaud

Mieux sur toute la
longueur pour que spid
repose totalement
sur pad.

Donc
(pas faux ma sss.)



Nathalie Barbeau

From: Claude Boule <CBoule@canadianhelicopters.com>
Sent: 03 May 2016 15:05
To: Nathalie Barbeau
Subject: Re: Suivi Bearpaws

Bon matin

Les nouvelles dimensions du ICA rencontre bien les dommages encourues.

Nous somme d'accord avec cette revision.

Merci

Claude Boule

Aircraft Standards Manager Superviseur des Standards en Aéronef

Canadian Helicopters Limited

Office 450-452-3000
Direct 450-452-3025
Mobile 514-229-6190
Facsimile 450-452-2483
canadianhelicopters.com

From: "Nathalie Barbeau" <nbarbeau@helitowcart.com>
To: <cboule@canadianhelicopters.com>
Date: 29/04/2016 09:37 AM
Subject: Suivi Bearpaws

Bonjour m. Boulé,

Seriez-vous en mesure de nous revenir aujourd'hui vs le dossier des bearpaws?

Avez-vous eu des nouvelles de votre équipe de l'ouest?

J'ai Renaud qui me signale qu'il attend après nous pour finaliser le tout.

PS : J'espère que vous pourrez profiter du soleil aujourd'hui et ainsi bénéficier de cette belle journée de convalescence.

À bientôt,

Mrs Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc)

nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

Tel: +1.418.561.4512 877A Alphonse-Desrochers
Fax: +1.418.836.4575 St-Nicolas, Levis, Qc
Canada, G7A 5K6

Nathalie Barbeau

From: Claude Boule <CBoule@canadianhelicopters.com>
Sent: 20 April 2016 13:42
To: nbarbeau@helitowcart.com
Cc: Thorsten Carlsen
Subject: AS350 bearpaws steamline
Attachments: 20160308_154621.jpg; 20160308_154700.jpg; 20160308_154716.jpg

Bonjour

Nous avons distribué le bulletin pour faire ses dégagements pour le bolts des skid tubes et nous nous sommes aperçues que beaucoup de ces bearpaws on déjà des "gooves", qui dépassent largement les limites du ICA.

Vue que ces dommages n'affecte pas l'intégrité du bearpaw donc il ne devrait pas avoir aucune limite dans ces régions affecté, les dommages devraient être adouci seulement sans toutefois passé à travers du bearpaw.

Ci-joint quelques photos.

(Prenez note que je suis présentement en congé de maladie due à une opération, mais je prend mes courriers)

merci

Claude Boule

Aircraft Standards Manager Superviseur des Standards en Aéronef

Canadian Helicopters Limited

Office 450-452-3000
Direct 450-452-3025
Mobile 514-229-6190
Facsimile 450-452-2483
canadianhelicopters.com

----- Forwarded by Claude Boule/Canadian Helicopters on 20/04/2016 01:29 PM -----

From: Thorsten Carlsen/Canadian Helicopters
To: Claude Boule/Canadian Helicopters@HNZ
Date: 09/03/2016 01:10 PM
Subject: Fw: Hvd bearpaws

Hi Claude please see below , left you a message on this would like to discuss as well do we have the final for the new AS350 engine inlet cover that covers the fdc bypass opening i,m getting lots calls for these thanks.

Thorsten Carlsen
Chief Engineer Western Canada Airbus/Turbomeca

Canadian Helicopters Limited
Direct 1-780-429-6902
Mobile 1-780-777-2580
Facsimile 1-780-429-6917
canadianhelicopters.com

----- Forwarded by Thorsten Carlsen/Canadian Helicopters on 03/09/2016 11:05 AM -----

From: Josh Mayer/Canadian Helicopters
To: Thorsten Carlsen/Canadian Helicopters@HNZ
Date: 03/08/2016 05:59 PM
Subject: Fw: Hvd bearpaws

Hey Thor,

Here are the pictures of the bearpaws. As I said over the phone, I first assumed they were streamline paws, but there is no "-S" designation in the part number as well as the optional equipment list says the normal Helitowcart (HTC) paws are in and the streamline ones are out. Now the MMA states that if the streamline paws are not installed that no action is required which seems silly to me since the normal HTC paws have the same kind of wear.

I plan to at the least dress out the damage. I want to know for the paperwork sake if I am filling out the MMA as complied with on these paws, OR if I sign out the MMA as N/A and make a separate log entry for dressing out the damage.

I await your opinion... Talk to you tomorrow.

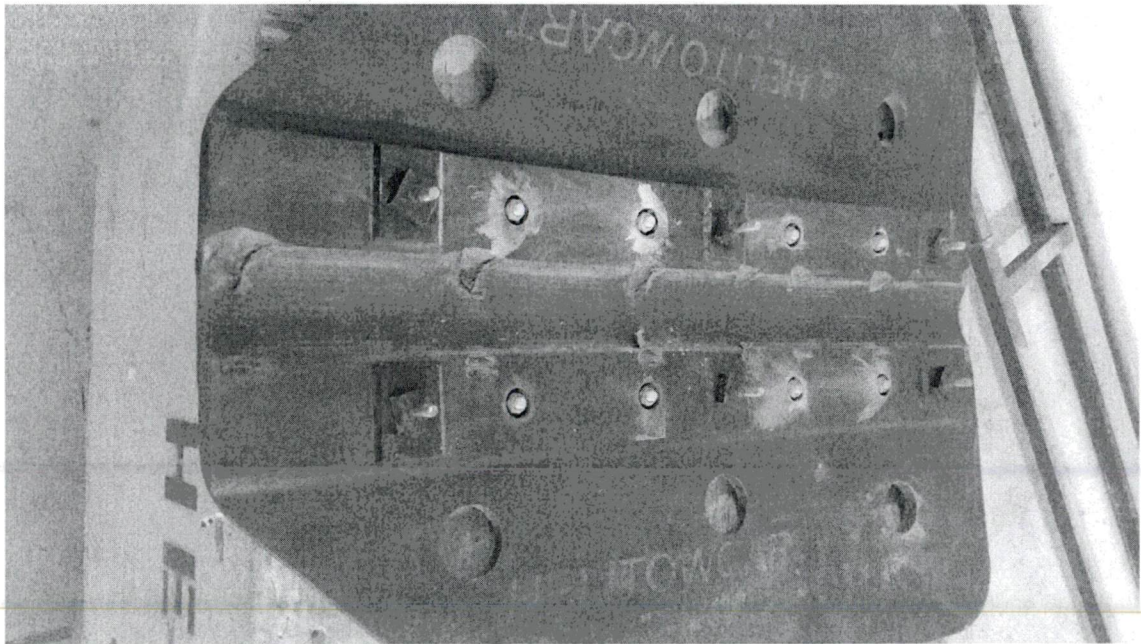
Josh Mayer

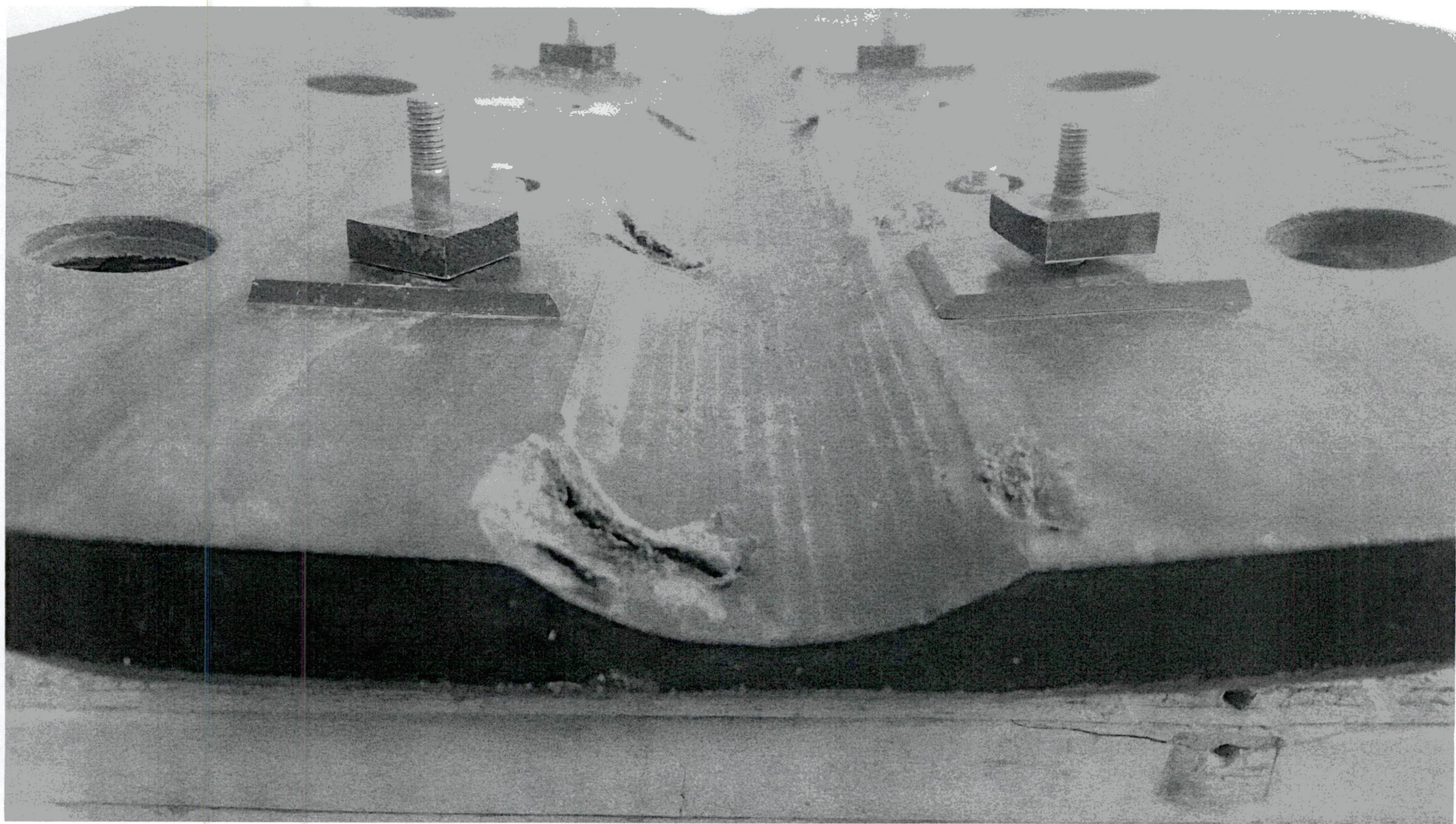
Canadian Helicopters Limited
canadianhelicopters.com

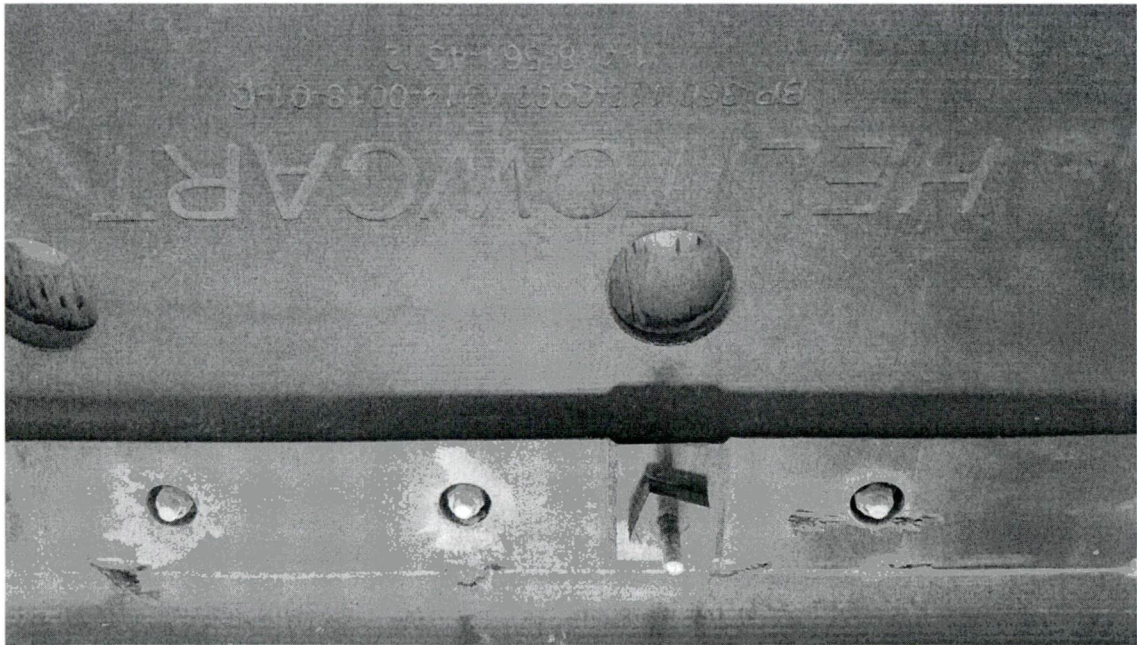
-----Forwarded by Josh Mayer/Canadian Helicopters on 03/08/2016 05:50PM -----

To: jmayer@hnz.com
From: Joshua Mayer <joshua.tagni@gmail.com>
Date: 03/08/2016 05:13PM
Subject: Hvd bearpaws

(See attached file: 20160308_154621.jpg)
(See attached file: 20160308_154700.jpg)
(See attached file: 20160308_154716.jpg)







Nathalie Barbeau

From: Renaud Berthelot-Richer <renaudb@ats-ast.com>
Sent: 02 February 2015 11:56
To: CBoule@canadianhelicopters.com
Cc: Nathalie Barbeau
Subject: BearPaws Helitowcart

Bonjour M. Boule,

Tel que discuté, j'aurais besoin de l'information suivante :

1. Photo montrant le bris ou dommage (ou l'absence de bris ou dommage) sur un bearpaw de plusieurs années;
2. Description du bris ou dommage observé par un opérateur;
3. Photo de côté montrant l'espace entre la tête de bolt et le bearpaw (une distance mesurée serait utile si possible);
4. Quels types de wear pads avez-vous d'installé (pleine longueur ou longueur partielle)?

Merci de nous avoir fait part de cette problématique.


Sincèrement,

Renaud

 <p>Renaud Berthelot-Richer, Inc. CONCEPTION STRUCTURE AÉRONAUTIQUE AERONAUTICAL STRUCTURE DESIGN T: 819.601.8049 #211 renaudb@ats-ast.com</p>	 <p>Aviatech SERVICES TECHNIQUES INC. TECHNICAL SERVICES INC. 2595 St-Olivier Trois-Rivières, QC, Canada G9A 4G1 www.ats-ast.com</p>
--	---

Ce courrier électronique est confidentiel et protégé. L'expéditeur ne renonce pas aux droits et obligations qui s'y rapportent. Toute diffusion, utilisation ou copie de ce message ou des renseignements qu'il contient par une personne autre que le (les) destinataire(s) désigné(s) est interdite. Si vous recevez ce courrier électronique par erreur, veuillez aviser l'expéditeur immédiatement.

This email is confidential and protected. The sender does not waive the rights and obligations attached to it. Any distribution, use or copying of this message or the information it contains by other than the (the) designated recipient(s) is prohibited. If you have mistakenly received this email, please notify the sender immediately.

 *Shredded paper should not be recycled when this is not our intent.*
Avec d'envoyer, pensez à l'environnement.

Nathalie Barbeau

From: Claude Boule <CBoule@canadianhelicopters.com>
Sent: 06 February 2015 09:59
To: Renaud Berthelot-Richer
Cc: Nathalie Barbeau
Subject: Re: BearPaws Helitowcart
Attachments: Damages at 1st installation.JPG; IMG_0180.JPG; IMG_0187.JPG; IMG_0197.JPG

Allo, voici quelques photos:

Damages are more evident with the Dart Skid tubes

Je n'est pas eu le temps de trouver un appareil avec des "vieux" dommages.

Claude Boule

Aircraft Standards Manager Superviseur des Standards en Aéronef

Canadian Helicopters Limited

Office 450-452-3000
Direct 450-452-3025
Mobile 514-229-6190
Facsimile 450-452-2483
canadianhelicopters.com



From: "Renaud Berthelot-Richer" <renaudb@ats-ast.com>
To: <CBoule@canadianhelicopters.com>
Cc: "Nathalie Barbeau" <nbarbeau@helitowcart.com>
Date: 02/02/2015 11:56 AM
Subject: BearPaws Helitowcart

Bonjour M. Boule,

Tel que discuté, j'aurais besoin de l'information suivante :

1. Photo montrant le bris ou dommage (ou l'absence de bris ou dommage) sur un bearpaw de plusieurs années;
2. Description du bris ou dommage observé par un opérateur;
3. Photo de côté montrant l'espace entre la tête de bolt et le bearpaw (une distance mesurée serait utile si possible);
4. Quels types de wear pads avez-vous d'installé (pleine longueur ou longueur partielle)?

Merci de nous avoir fait part de cette problématique.

Sincèrement,

Renau

Renaud Berthelot-Richer, ing.
CONCEPTION STRUCTURE AÉRONAUTIQUE
AERONAUTICAL STRUCTURE DESIGN

T: 819.601.8049 #211
renaudb@ats-ast.com


Aviatech
SERVICES TECHNIQUES™
TECHNICAL SERVICES™

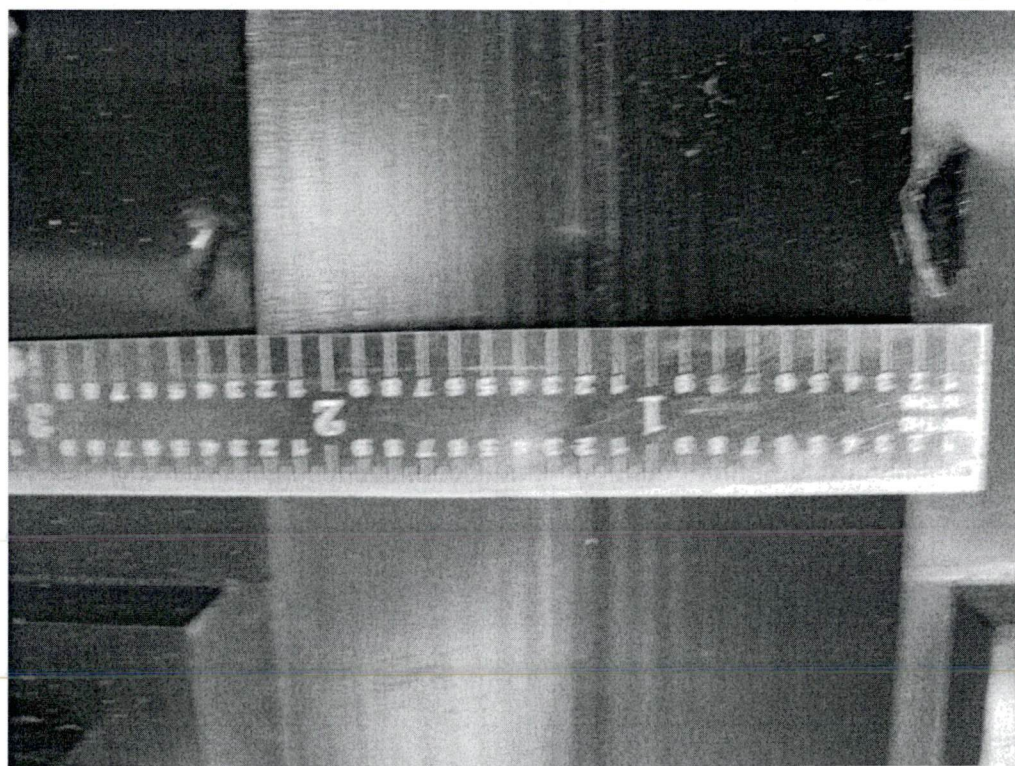
2595 St-Olivier
Trois-Rivières, Qc, Canada
G9A 4G1

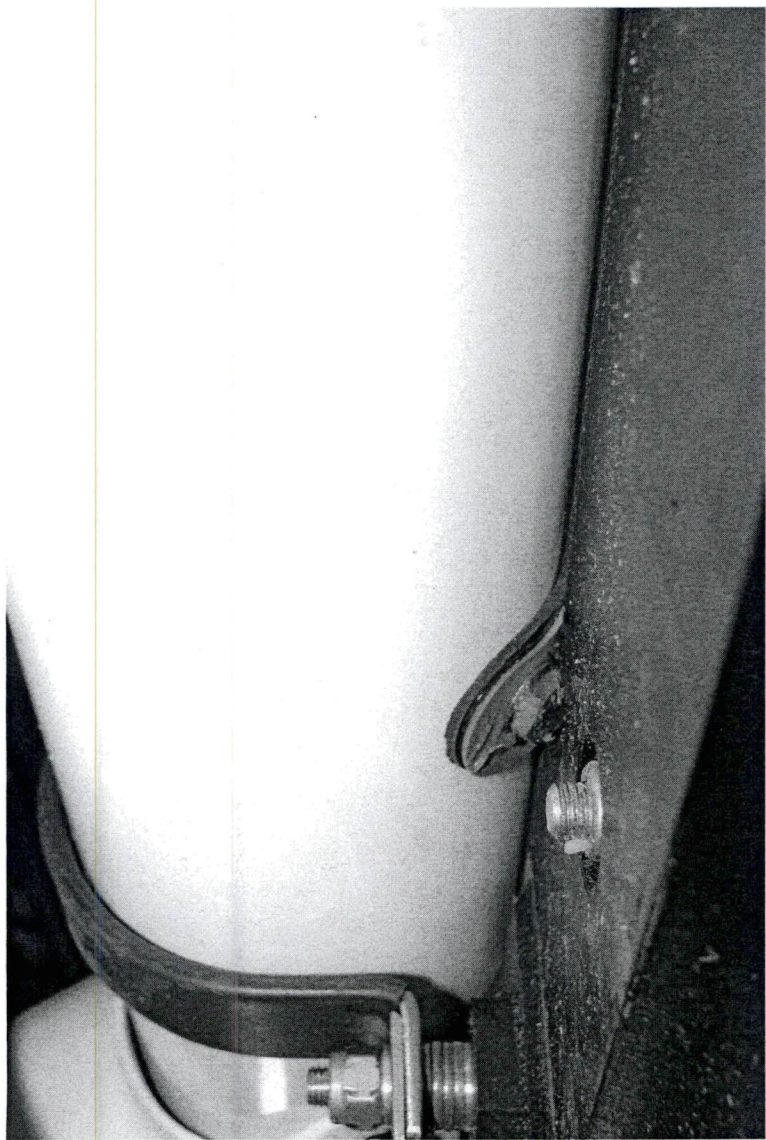
www.ats-ast.com

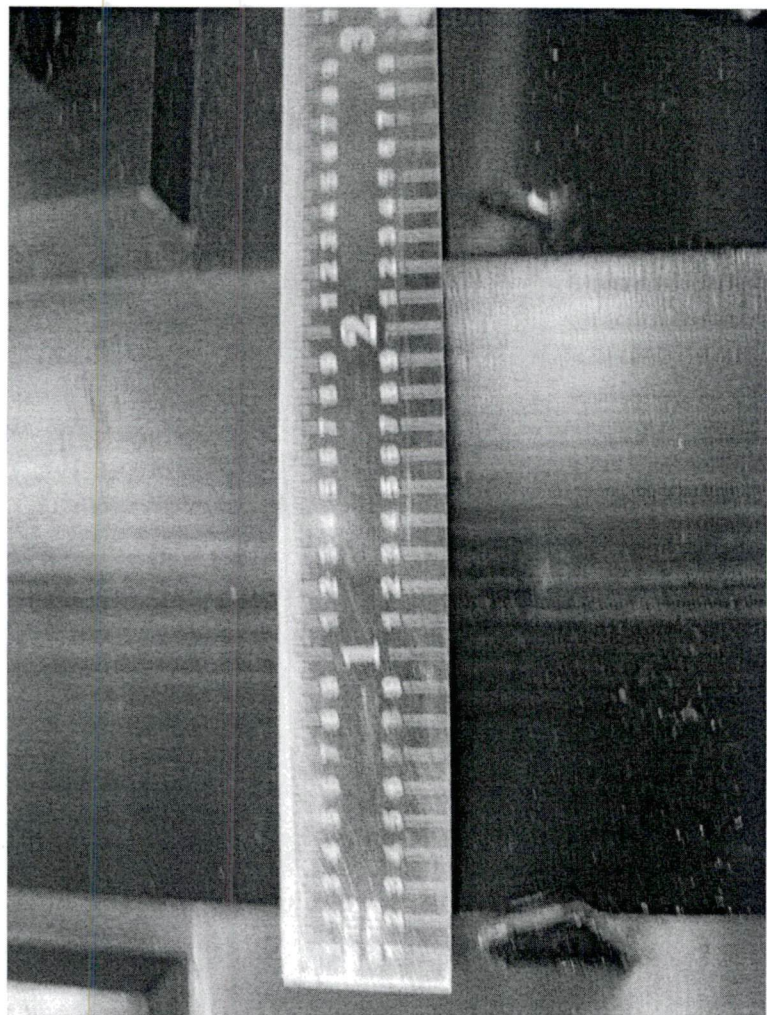
Ce courrier électronique est confidentiel et protégé. L'expéditeur ne renonce pas aux droits et obligations qui s'y rapportent. Toute diffusion, utilisation ou copie de ce message ou des renseignements qu'il contient par une personne autre que le (les) destinataire(s) désigné(s) est interdite. Si vous recevez ce courrier électronique par erreur, veuillez aviser l'expéditeur immédiatement.

This email is confidential and protected. The sender does not waive the rights and obligations attached to it. Any distribution, use or copying of this message or the information it contains by other than (the) designated recipient(s) is prohibited. If you have mistakenly received this email, please notify the sender immediately.

 *Si vous avez obtenu cette lettre par erreur, veuillez en aviser l'expéditeur.*
Si vous avez obtenu cette lettre par erreur, veuillez en aviser l'expéditeur.





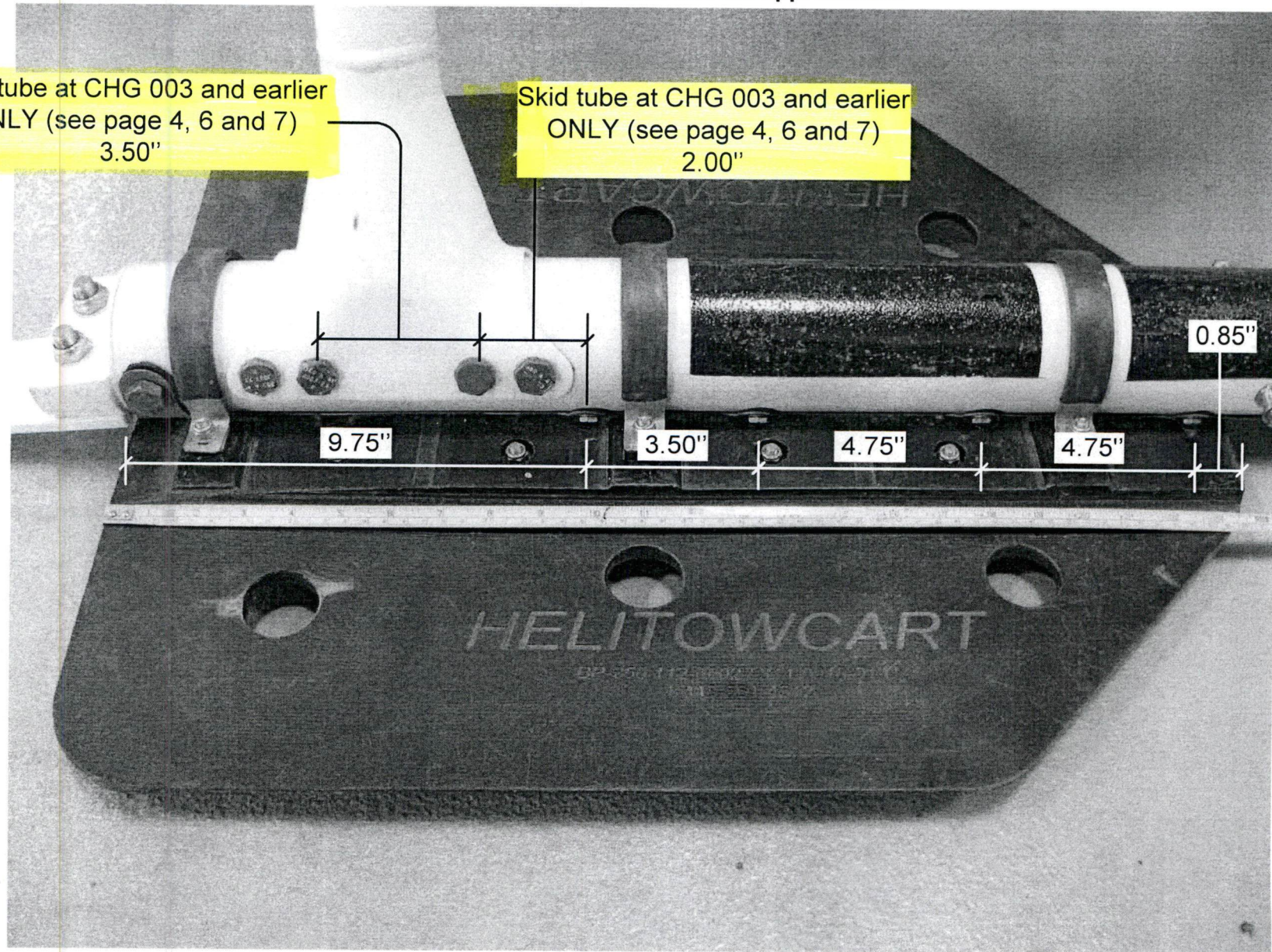


Dart Skid Tube wear pad bolt dimensions

*** Dimensions are taken from BearPaw fwd and aft edges ***
Measurements are in inches and are approximate.

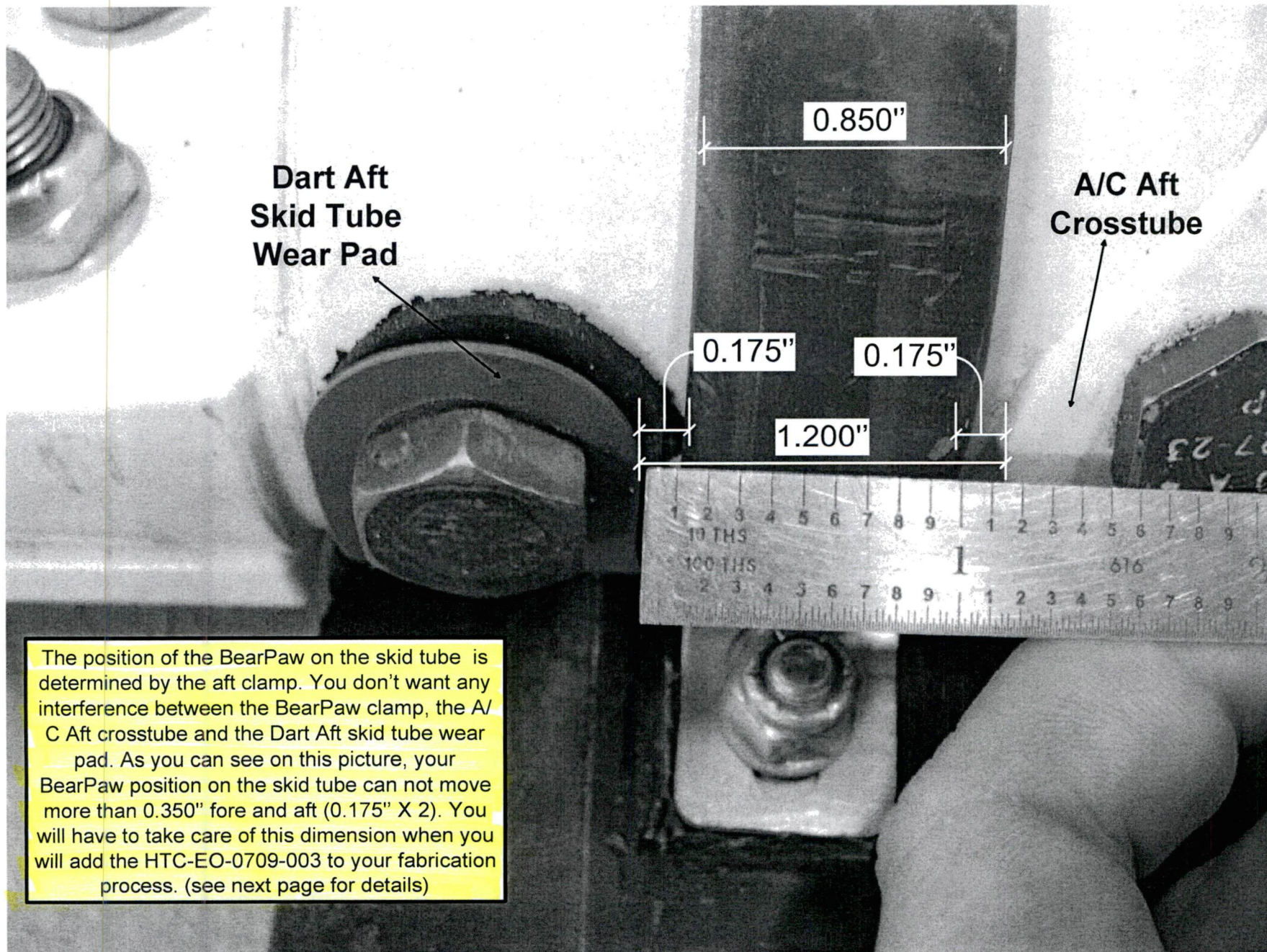
Skid tube at CHG 003 and earlier
ONLY (see page 4, 6 and 7)
3.50"

Skid tube at CHG 003 and earlier
ONLY (see page 4, 6 and 7)
2.00"



BP Dim. Rev. I (002) For Sifton Extractor

4/1

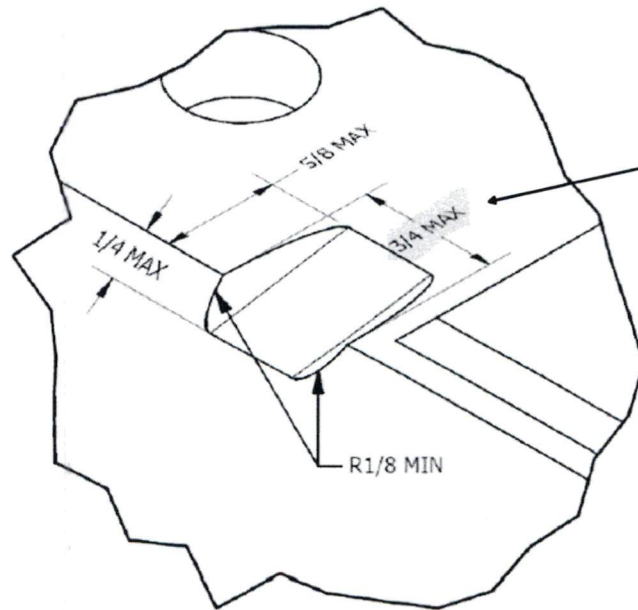


2/4

3.0 BearPaw Repair

3.1 Remove all components from BearPaw pads.

Repair BearPaw pads based on the following dimensions.



* You may have to increase the repair scheme width ($\frac{3}{4}$ " max on the picture beside) to allow the 0.350" BearPaw fore and aft movement mentioned on the previous page. We suggest 1" instead of $\frac{3}{4}$ ".

3.2

Dremel
End mill

NOTE

Only repair BearPaws at locations where damage occurred, or where damage could eventually occur. Reduce above dimensions as required, except radius.

3/4

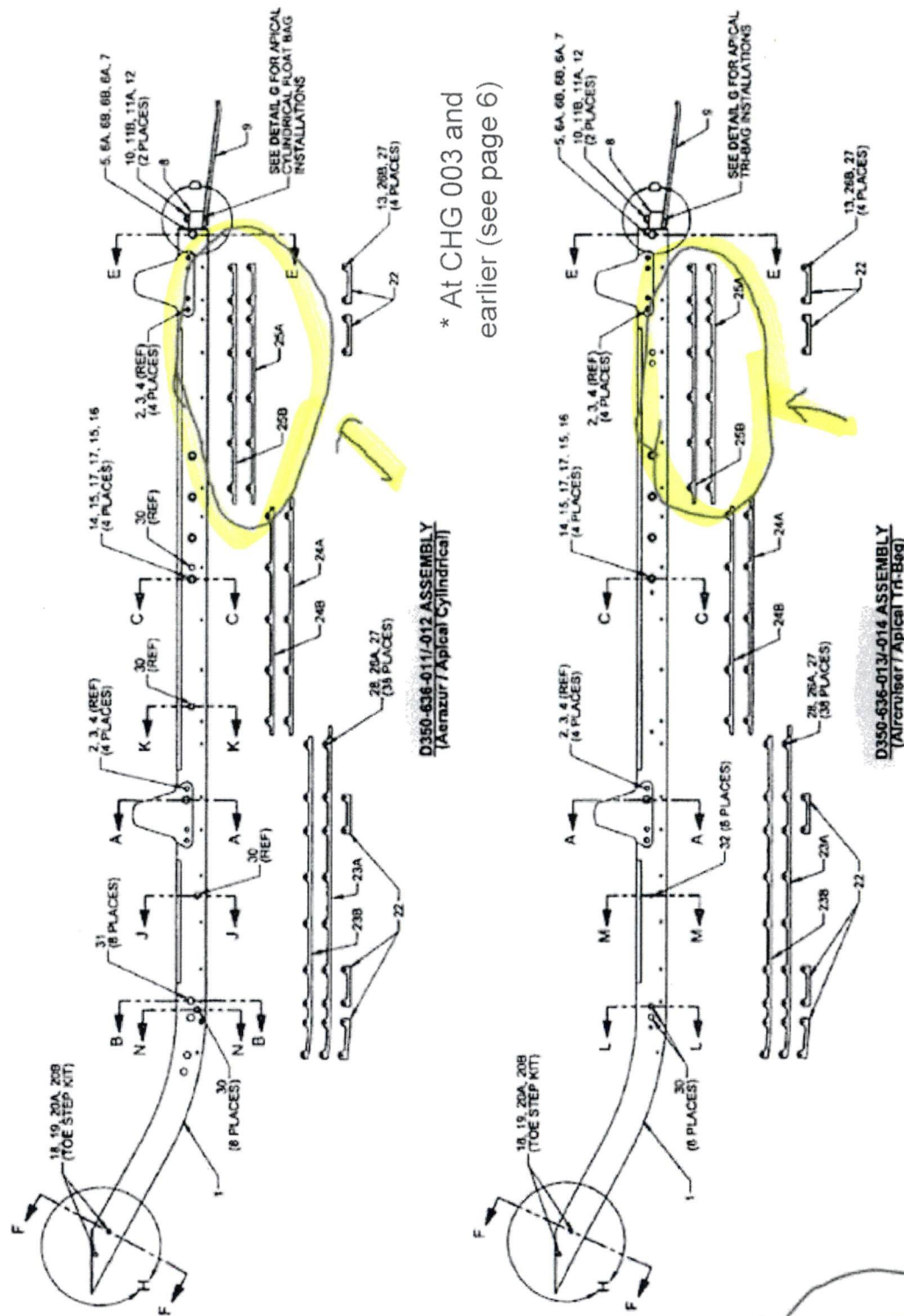
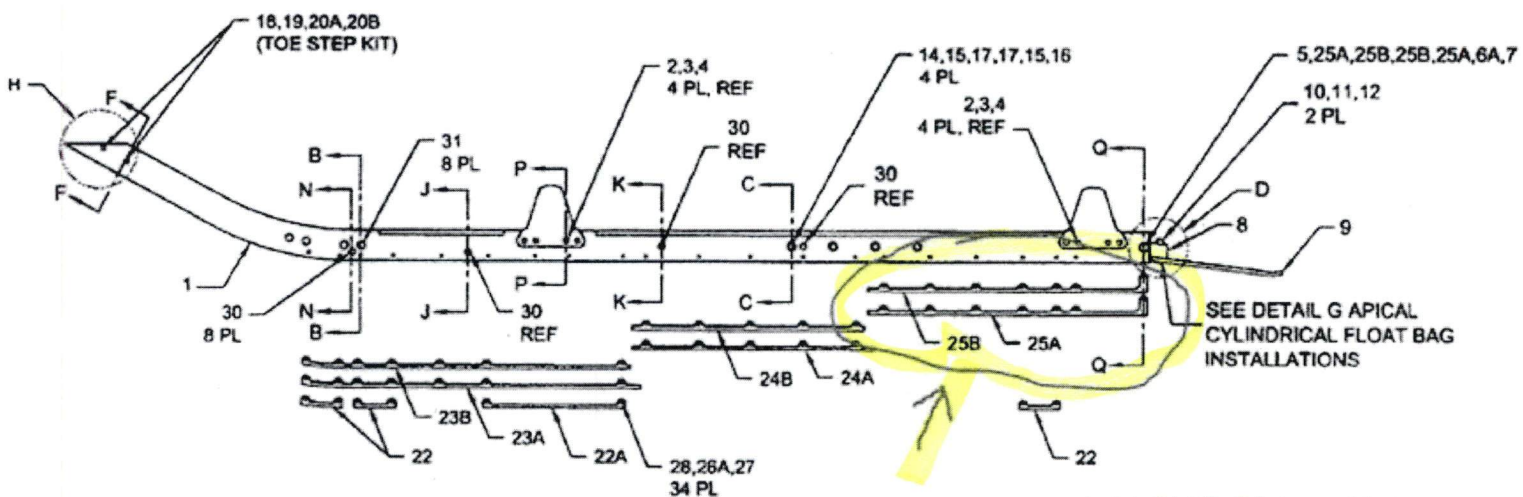


Figure 1: D350-636-011/-012/-013/-014 SKIDTUBE ASSEMBLY AT CHG 003

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

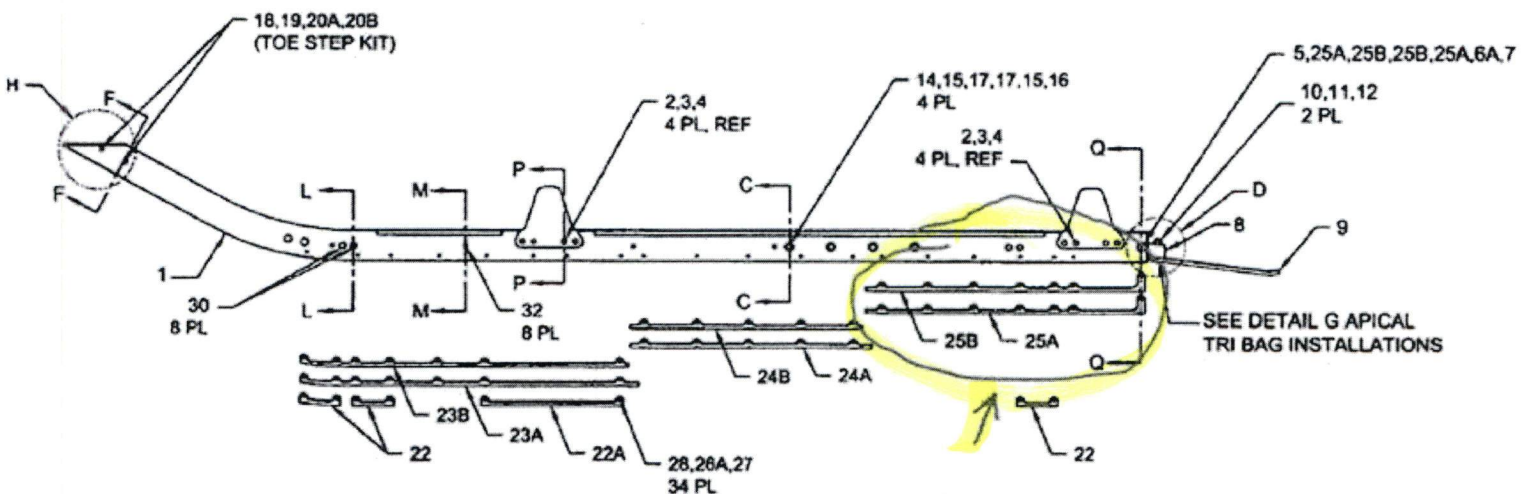
Revision: J
Date: 13.03.01

4/2



D350-636-011/-012 ASSEMBLY
(Aerazur / Apical Cylindrical)

* At CHG 004 and later
(see page 6)



D350-636-013/-014 ASSEMBLY
(Aircruiser / Apical Tri-bag)

Figure 2: D350-636-011/-012/-013/-014 SKIDTUBE ASSEMBLY

AT CHG 004 AND SUBSEQUENT

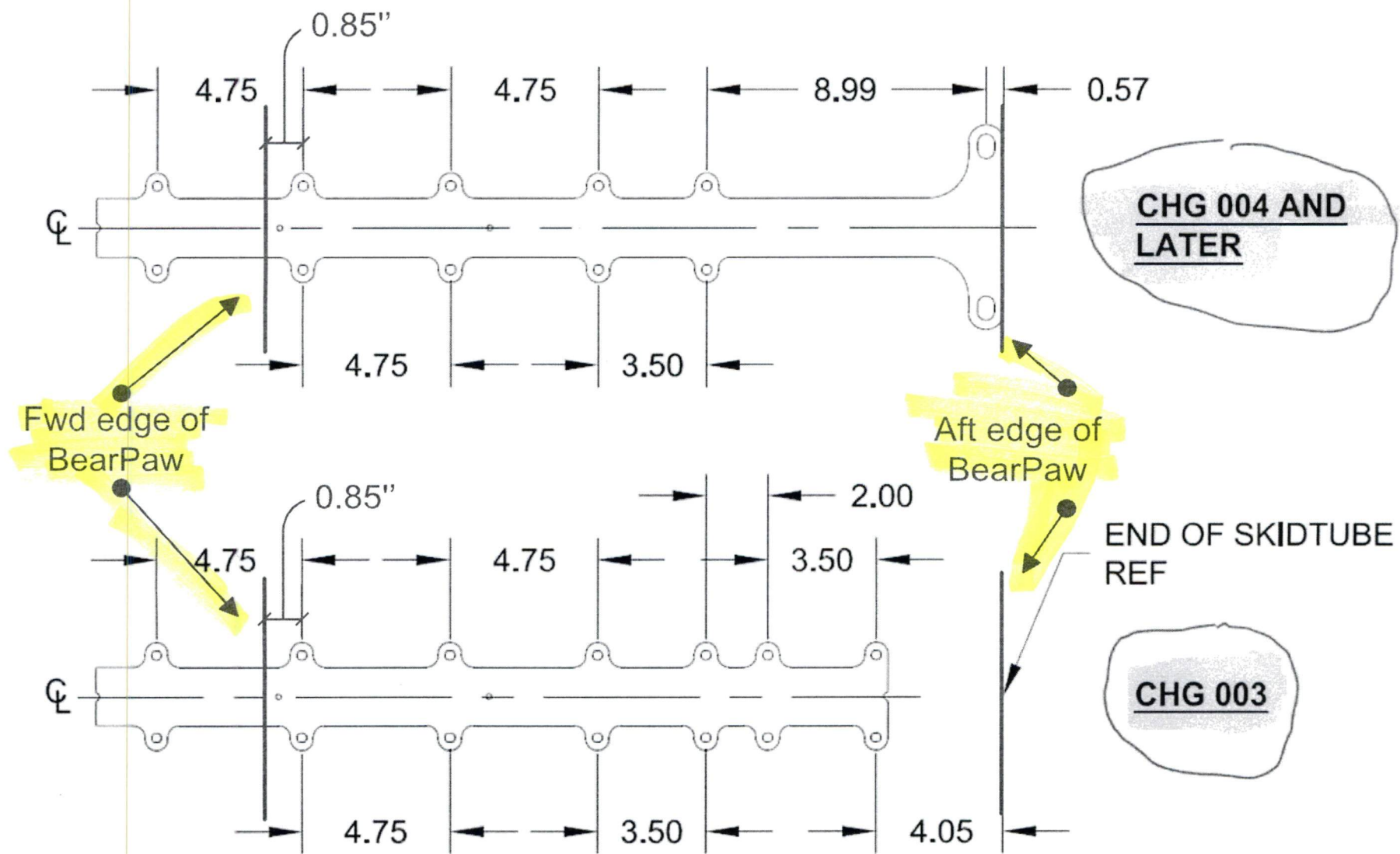
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

Revision: J

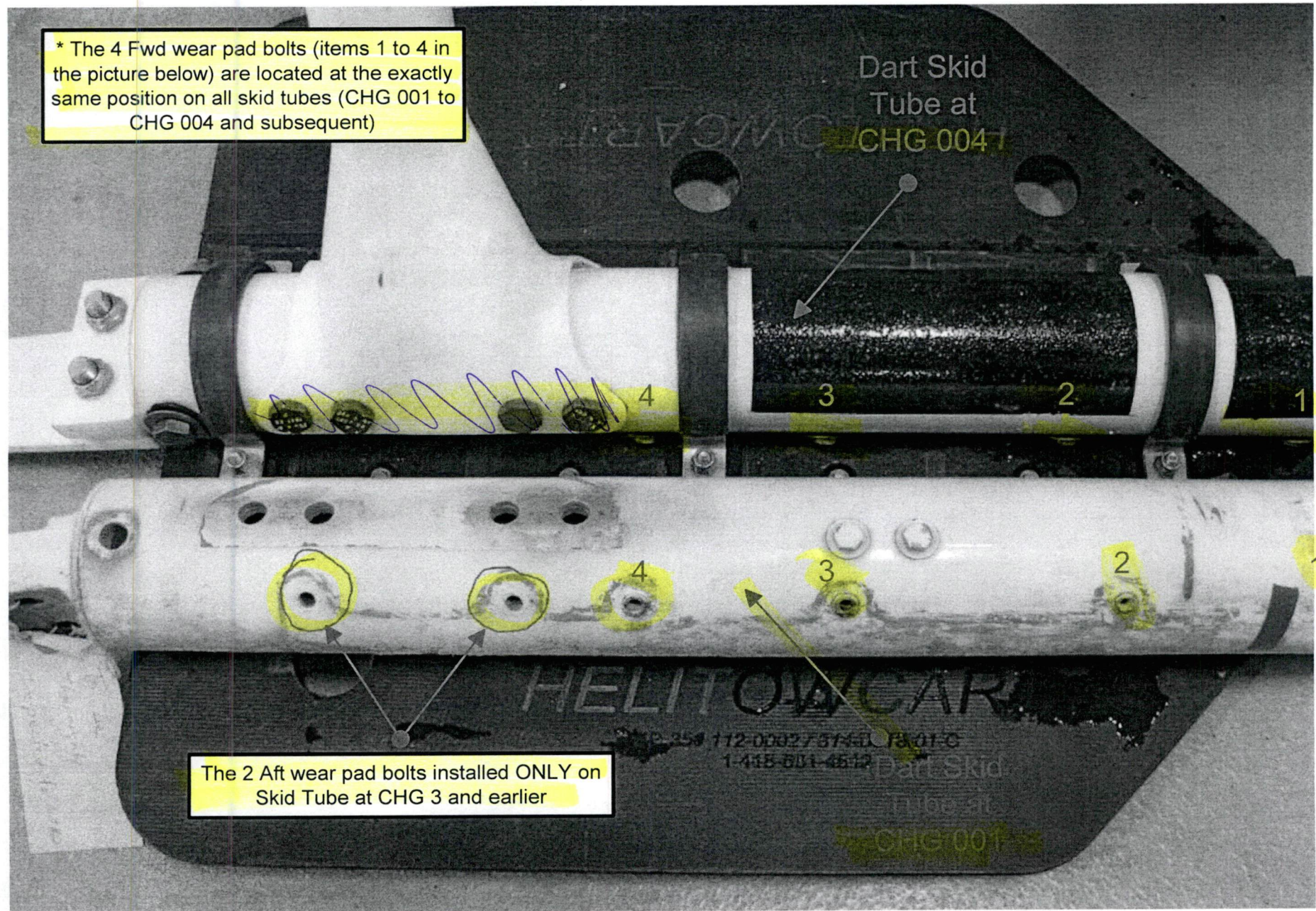
Date: 13.03.01

5/8



* The 4 Fwd wear pad bolts (items 1 to 4 in the picture below) are located at the exactly same position on all skid tubes (CHG 001 to CHG 004 and subsequent)

Dart Skid
Tube at
CHG 004



The 2 Aft wear pad bolts installed ONLY on Skid Tube at CHG 3 and earlier

Nathalie Barbeau

From: Simon Ebacher <SEbacher@canadianhelicopters.com>
Sent: 19 January 2016 13:25
To: Nathalie Barbeau
Subject: Follow up BearPaws

Salut Nathalie,

Pas de nouvelles, bonne nouvelle! Je suppose que vous n'avez pas de questions suite aux documents que je vous ai fait parvenir vendredi dernier.

Je voulais juste confirmer avec vous que j'ai encore vérifié votre installation de BearPaw sur un skid tube Eurocopter (Airbus) et sur un skid tube Van Horn Aviation et il y a interférence avec les bolts de wear pads (situées plus haute que celles de Dart) seulement quand le BearPaw est incliné à plus de 30 degré. Ce qui arrive que très rarement, même jamais!

N'hésitez pas à me contacter pour toutes interrogations!

Bonne semaine!!

Simon Ebacher
Lead Hand Aircraft Maintenance Engineer

Canadian Helicopters Limited
Office 450-452-3000
Direct 450-452-3092
canadianhelicopters.com



Nathalie Barbeau

From: Simon Ebacher <SEbacher@canadianhelicopters.com>
Sent: 14 January 2016 08:47
To: Nathalie Barbeau
Cc: Claude Boule
Subject: BearPaw dimensions
Attachments: BearPaw dimensions.pdf

1

Bon matin Nathalie,

Tel que discuté, voici les dimensions pour pouvoir intégrer le HTC-EO-0709-003 à votre production de BearPaws.

Questions:

- Pensez-vous faire ce EO sur tous les BearPaw que vous avez en inventaire? Serait-il fait sur ceux que l'on commanderait prochainement?

- Qu'arrivera-t-il avec le part number? Changera-t-il ? Nous ne le souhaitons pas! Si vous avez l'intension de le changer, appelez moi pour que l'on en discute.

Si vous avez des questions au sujets de ces dimensions ou tout autres interrogations, n'hésitez pas à me rejoindre.

J'ai bien reçu votre échantillons de votre nouveau tissu. Pouvez vous, lors de l'envoi des photos, nous mentionner si le prix reste le même que l'ancien tissu ou s'il y a modification du prix?

Bonne journée,

Simon Ebacher

Lead Hand Aircraft Maintenance Engineer

Canadian Helicopters Limited

Office 450-452-3000

Direct 450-452-3092

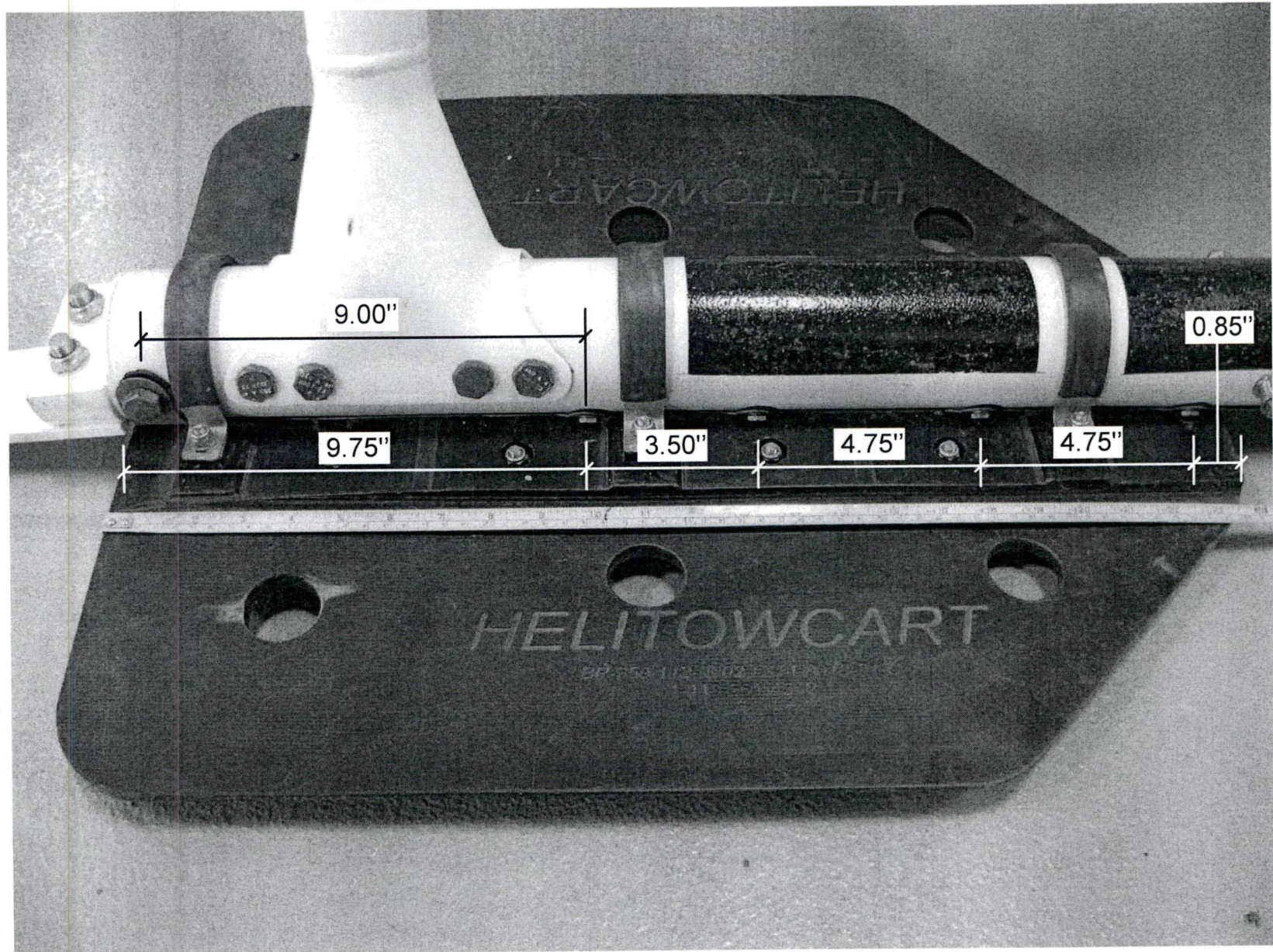
canadianhelicopters.com

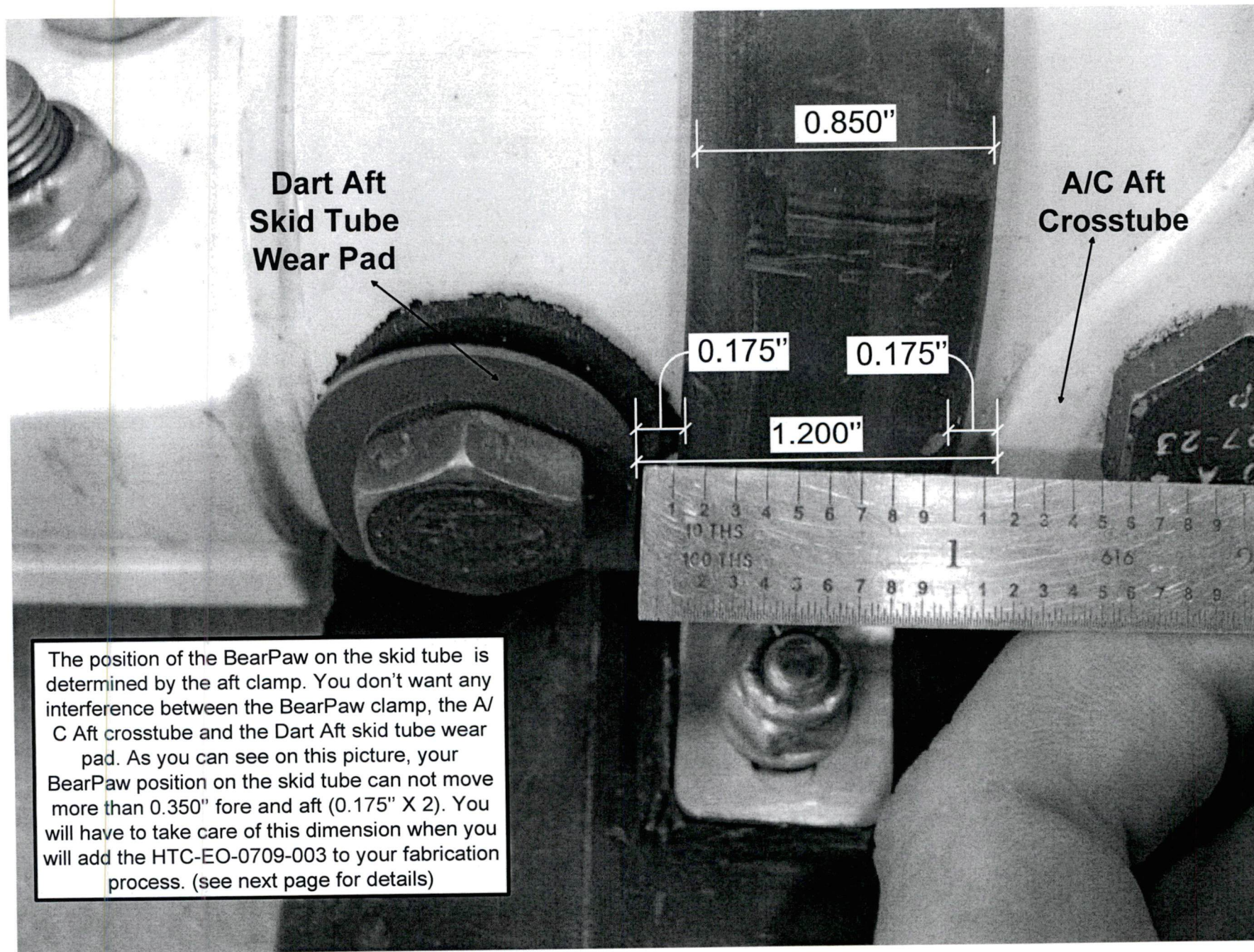


Dart Skid Tube wear pad bolt dimensions

*** Dimensions are taken from BearPaw fwd and aft edges ***

Measurements are in inches and are approximate.

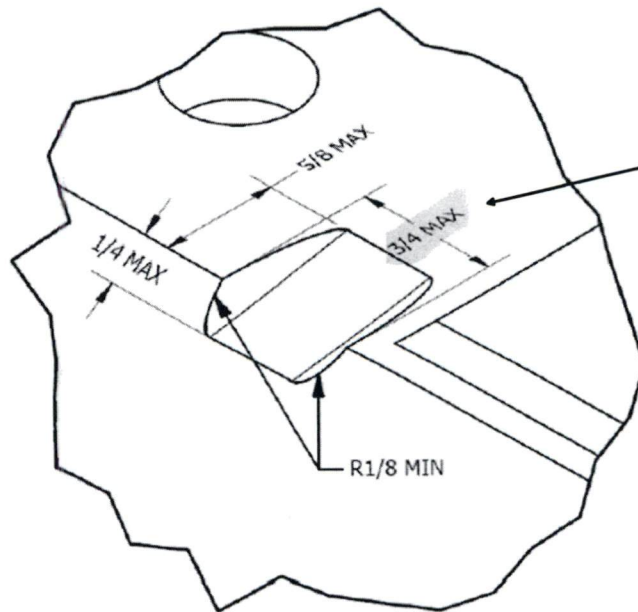




3.0 BearPaw Repair

3.1 Remove all components from BearPaw pads.

Repair BearPaw pads based on the following dimensions.



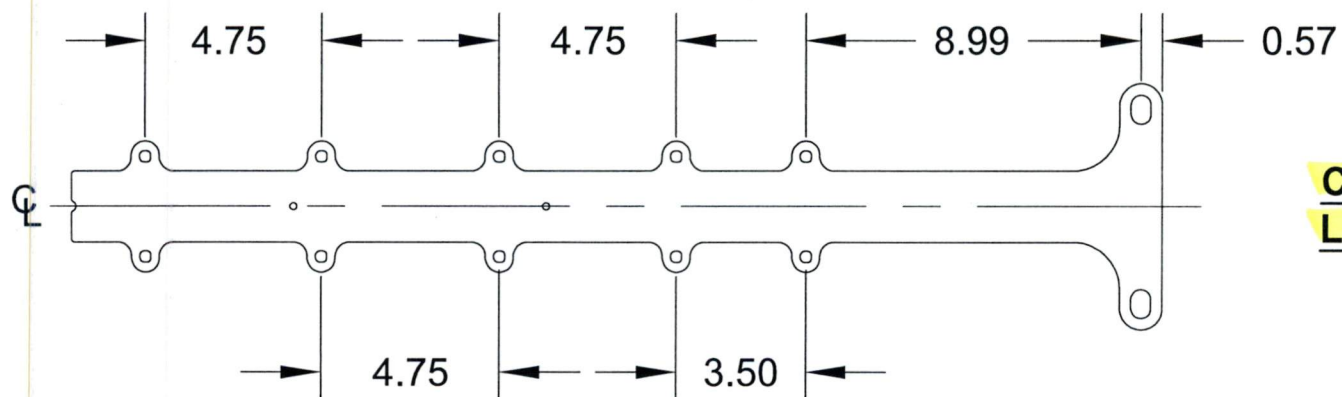
* You may have to increase the repair scheme width ($\frac{3}{4}$ " max on the picture beside) to allow the 0.350" BearPaw fore and aft movement mentioned on the previous page. We suggest 1" instead of $\frac{3}{4}$ ".

3.2

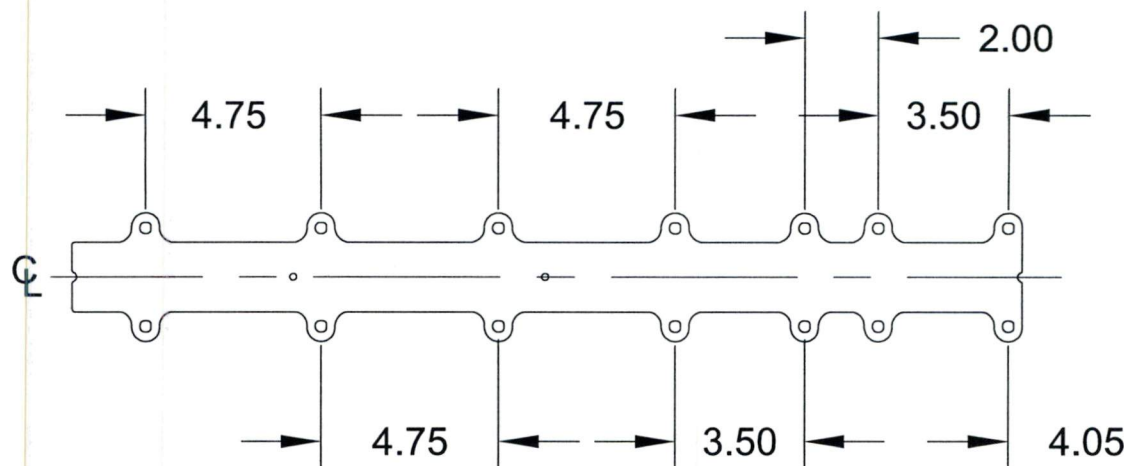
Dremel
End mill

NOTE

Only repair BearPaws at locations where damage occurred, or where damage could eventually occur. Reduce above dimensions as required, except radius.



**CHG 004 AND
LATER**



END OF SKIDTUBE
REF

CHG 003

INFO DE SIGN
EPICHER

DAET - SKID TUBE D350-636-XXX DEAR SHE DIT



IIN-D350-636
Page 1 of 31

DART AEROSPACE USA, INC.
19717 62nd Ave. South
Suite E-101
Kent, WA 98032

Tel: 1 613 632 5200
Fax: 1 613 632 5246



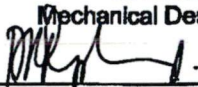
e-mail: hell@dartaero.com
<http://www.dartaero.com>

INSTALLATION INSTRUCTIONS

IIN-D350-636

Skidtube Installations

EUROCOPTER AS 350 / 355 MODELS

Prepared By:  S. Madeira
Checked By:  M. Bellavance
Mechanical Designer
Released By:  D. Shepherd, P. Eng.
DE #02

©COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J
Date: 13.03.01

REVISION RECORD

Revision	Issue Date	Description
A	98.04.16	New Issue
B	98.09.02	Change blade bolt to AN8-16A
C	98.11.19	Add -013/-014 skid tubes for Aircruiser compatibility
D	06.01.03	Add compatibility with Apical Tri-bag Floats and Apical Cylindrical Floats
E	07.05.15	Change wearplates to stainless steel; Re-organize installation procedure.....pg. 4-7; Add Dart D350-748 crosstube compatibility.....pg. 3; Incorporate DSI 9343.....pg. 6,13; Replace D350-636-041 kit with -043 kit.....pg. 12,13; Item 17 now D3631-1 Washer.....pg. 12; Item 18 now ALS4-1032-225.....pg. 12; Removed * from items 9-12.....pg. 12; Add rubber gaskets, item 23B, 24B, 25B.....pg. 13; Remove NAS1515H3L washers from the wearshoes.....pg. 13
F	08.08.14	Add note to use Antiseize compound.....pg. 5, 8; Add reference to DSI 9413;.....pg. 6-7; Add D350-636-011/-012/-013/-014 at CHG 004 drawing.....pg. 10; Add Parts List for D350-636-011/-012/-013/-014 at CHG 004.....pg. 17
G	10.07.12	Incorporated DSI 9456, DSI 9457, DSI 9490 Fixed typo on pg. 3, 355A41-2002-03 changed to 355A41-2001-03
H	10.07.26	Add D350-636-015/-016/-017/-018/-047 kits.....pg. 13; Add Parts List for D350-636-015/-016/-017/-018/-047.....pg. 29; Add D350-636-215/-216/-217/-218 Kits.....pg. 13; Add Parts List for D350-636-215/-216/-217/-218.....pg. 31
I	10.10.25	D4170-3 Spacer was D4170-1pg. 10,30; Drill size for D4170-3 Spacer is Ø0.453" (was Ø0.313 for -1).....pg. 10
J	13.03.01	Incorporate DSI 9570.....pg. 3; Ø0.633" was Ø0.625" section 3.10.1.....pg.10; Revised section R-Rpg. 17; Update Weight and Balance for D350-636-047.....pg. 22; Add 1X D3456-1 to D350-636-109.....pg. 28

1.0 INTRODUCTION

These instructions cover the installation of Dart D350-636-011/-012/-013/-014/-015/-016/-017/-018/-215/-216/-217/-218 Skidtube Installations on the Eurocopter AS 350/355 series rotorcraft.

The following table lists the skidtubes that the Dart skidtubes replace as well as the float systems that the Dart skidtubes are compatible with.

DART SKIDTUBE	AS SKIDTUBE	COMPATIBLE FLOAT SYSTEM
D350-636-011/ -015/-215	350A41-1016-0151 350A41-1016-1061 350A41-1016-1063 350A41-1016-1070 350A41-1016-1255 350A41-1016-1261 350A41-1016-1262 350A41-1016-1263 350A41-1016-4806	AERAZUR APICAL CYLINDRICAL FLOATS
D350-636-012/ -016/-216	350A41-1016-0251 350A41-1016-1155 350A41-1016-1161 350A41-1016-1163 350A41-1016-1171 350A41-1016-1361 350A41-1016-1362 350A41-1016-1363 350A41-1016-4906	AERAZUR APICAL CYLINDRICAL FLOATS
D350-636-013/ -017/-217	350A41-1080-03	AIRCRAUISER APICAL TRI-BAG FLOATS
D350-636-014/ -018/-218	350A41-1080-02	AIRCRAUISER APICAL TRI-BAG FLOATS

The Dart skidtube installations are to be installed with the crosstubes listed in the following table. It is also acceptable to install the Dart skidtubes on approved crosstube part numbers that have been replaced by the part numbers in this table.

DART SKIDTUBE	FORWARD CROSSTUBES	AFT CROSSTUBES
D350-636-011	D350-748-101	D350-748-201
D350-636-012	350A41-1086-01	350A41-1087-00
D350-636-013	350A41-1000-21	350A41-1029-02
D350-636-014	350A41-2000-21	350A41-2001-02
D350-636-015	355A41-2000-02	355A41-2001-03
D350-636-016	350A41-1086-02	350A41-1087-02
D350-636-017		
D350-636-018		
D350-636-215		
D350-636-216		
D350-636-217		
D350-636-218		

The components in the Dart skidtube installations are as defined in the table in Section 5.0 to 9.0 of this document. The different Dart installations are designated by the last 3 digits of the Dart skidtube installation part number. For convenience, only the last three digits of the part number are listed on the top row of each table. The quantity of each component which is included in the D350-636-011 Skidtube Installation, for example, is as defined in the column labeled -011.

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J
Date: 13.03.01

NOTES:

The D350-636-011/-012 kits are the standard configuration of the installation and are compatible with Aerazur floats and Apical Cylindrical floats consisting of P/N 20327-100 fwd float; 20328-100 mid float; 20329-100 aft float that are FAA STC'd per SR00470LA (AS 350 models) and SR00645LA (AS 355 models).

The D350-636-013/-014 kits are compatible with Alrcruiser floats and Apical Tri-bag floats consisting of P/N 20427-101 fwd float; 20428-101 mid float; 20429-101 aft float that are FAA STC'd per SR00831LA (AS 350/355 models).

D350-636-011/-012/-013/-014 skidtubes at CHG 001 to be installed with Apical Cylindrical or Tri-bag systems can be made compatible by performing the modification outlined in Section 3.2 of this document.

Standard (non-float), Aerazur, and Alrcruiser float installations are compatible with the Dart D350-591 Heli-Access-Step™.

Installations with either the Apical Cylindrical or Tri-bag float systems are not compatible with the Dart D350-591 Heli-Access-Step™.

The D350-636-047 Run-on Landing Wearplate Kit is a heavy-duty run-on wearplate that features large tungsten carbide weld beads and is installed using a through-bolt design to eliminate the chance of the skidtube wearshoe inserts being damaged. The D350-636-047 Run-on Landing Wearplate Kit is compatible with -011/-012/-013/-014/-015/-016/-017/-018/-215/-216/-217/-218 Skidtubes with/without floats installed. The D350-636-047 Run-on Landing Wearplate Kit can be installed as outlined in Section 3.9 of this document.

The D350-636-015/-016 Skidtube Installations are similar to Dart's D350-636-011/-012 Skidtubes, and the D350-636-017/-018 Skidtube Installations are similar to Dart's D350-636-013/-014 Skidtubes, except that the wearshoe inserts have been removed and the tubes are fitted with the D350-636-047 Run-on Landing Wearplate Kit. The D350-636-014/-015/-016/-017/-018 Skidtubes can be installed as outlined in Section 3.1 of this document.

The D350-636-101 Toe Step can be installed on D350-636-011/-012/-013/-014/-015/-016/-017/-018 Skidtubes to provide easy access to the cock pit for the pilots. The D350-636-101 Toe Step can be installed as outlined in Section 3.6 of this document.

The D350-636-105A/B Wedge Kits can be installed on D350-636-011/-012/-013/-014/-015/-016/-017/-018 Skidtubes to help prevent the D2741 blade from getting snagged on objects on the ground during take-off. The D350-636-105A Wedge Kit is compatible with Apical Float Systems per STC SR00470LA, SR00645LA and SR00831LA with the low angle float extensions but is not compatible with OEM skidtubes. The D350-636-105B Wedge Kit is compatible with non-float tube equipped skidtubes but is not compatible with OEM skidtubes. The D350-636-105A/B Wedge Kit can be installed as outlined in Section 3.7 of this document.

The D350-636-107 Cable Guard kit may be installed on D350-636-011/-013/-015/-017/-215/-217 Skidtube installations during hoisting operations to prevent damage to the cable and skidtube. The D350-636-107 Cable Guard Kit consists of the D350-636-107A Forward Cable Guard and the D350-636-107B Aft Cable Guard Kits. The D350-636-107A/-107B kits may be installed separately or in combination. The D350-636-107A/B Cable Guard Kit can be installed as outlined in Section 3.8 of this document.

The D350-636-215/-216 Skidtubes are similar to Dart's D350-636-015/-016 Skidtubes and the D350-636-217/-218 Skidtubes are similar to Dart's D350-636-017/-018 Skidtubes, except that the D350-636-101 Toe-Step Kit, D350-636-105A Wedge Kit, and D350-636-109 Tow Ring Kit are pre-installed for the convenience of the customer. The D350-636-215/-216/-217/-218 Skidtubes can be installed as outlined in Section 3.1 of this document. The D350-636-109 Tow Ring Kit can be installed as outlined in Section 3.10 of this document.

2.0 GENERAL NOTES

COMPATIBILITY

Compatibility of this installation with the aircraft is the **responsibility of the installer**. Ensure that this installation does not conflict with a previous modification.

WORKMANSHIP

Unless otherwise stated, all workmanship should be to the standards set by the Aircraft Maintenance Manual.

CONTINUING AIRWORTHINESS

This installation should be maintained in accordance with Instructions for continued Airworthiness ICA-D350-636.

3.0 INSTALLATION PROCEDURE

If installing the D350-636-011/-012/-013/-014/-015/-016/-017/-018/-215/-216/-217/-218 Skidtube Kits without floats, refer to Section 3.1.

If installing the D350-636-011/-012/-013/-014 Skidtube Kits at CHG 001 with Apical Tri-bag or Cylindrical Float Systems, refer to Section 3.2.

If installing the D350-636-011/-012/-013/-014 Skidtube Kits at CHG 002 or later and D350-636-015/-016/-017/-018/-215/-216/-217/-218 Skidtube Kits with Apical Tri-bag or Cylindrical Float Systems, refer to Section 3.3.

Note: The skidtube assembly figure is located on page 11, 12, and 13 and the detail and section views are located on pages 14 to 19.

Note: In corrosive environments, it is recommended to coat all faying surfaces of hardware and fasteners with LPS Laboratories LPS-3 corrosion Inhibitor. Coat exposed hardware with LPS Procyon after installation and clean excess with a degreaser (MEK).

3.1 Installation of the D350-636-011/-012/-013/-014/-015/-016/-017/-018/-215/-216/-217/-218 Skidtube Kits:

3.1.1 Remove existing skidtube(s) from the crosstubes per the Aircraft Maintenance Manual or relevant STC. Retain the existing saddle hardware (items 2, 3, and 4 for OEM crosstubes) for the installation of the Dart skidtubes.

3.1.2 If not installed, install the D2741 Blade (item 9) onto the skidtube using the hardware shown in **Detail D**. Torque the fasteners to 480-690 in-lbs (54.2-78.0 N-m).

NOTE: It is recommended that an Antiseize thread compound (lubricant) be applied to the AN8C21A bolts prior to installation. Lubricant must meet or exceed MIL-A-907.

3.1.3 If previous float installations are being removed, the plugs (items 30, 31 and 32) must be re-installed in the skidtube at their respective locations.

3.1.4 Install Dart skidtube(s) onto the crosstubes using the hardware that was retained in Section 3.1.1 (items 2, 3, and 4 for OEM crosstubes) when the existing skidtubes were removed. Torque the bolts per the Aircraft Maintenance Manual or relevant STC. All other hardware comes installed on the skidtube kit.

Note: If installing the Dart skidtube(s) with the Dart D350-748-101/-201 Crosstube Kits per Canadian STC SH06-27/FAA STC SR02359NY, items 2, 3 and 4 will be replaced with the hardware provided in the crosstube kit (refer to Canadian STC SH06-27/FAA STC SR02359NY).

3.2 Installation of Apical Tri-bag or Cylindrical Float Systems on the D350-636-011/-012/-013/-014 Skidtube Kits at CHG 001:

Note: The following instructions require the Dart D350-636-103/-104 Apical Float Conversion Kit

- 3.2.1 Remove the existing skidtube(s) from the crosstubes per the Aircraft Maintenance Manual or relevant STC. Retain the existing saddle hardware (items 2, 3, and 4 for OEM crosstubes) for the installation of the Dart skidtubes.
- 3.2.2 Additional holes will have to be drilled before installing the respective float systems. It is acceptable to drill holes for compatibility in accordance with the relevant STC. Note that these holes will have to be drilled through the I-beam in the middle of the skidtube.
- 3.2.3 Replace the D2742-1/-2 Blade Fitting with the D3488-041/-042 Blade Fitting (provided in the D350-636-103/-104 conversion kits) as described in Section 3.5.
Note: The D3488-041/-042 Blade Fitting replaces the Apical P/N 20473-7/-8 FWD fitting.
- 3.2.4 If installing the Apical P/N 20327-100 forward floats onto the Dart D350-636-011/-012 Skidtube Kits, install the Dart D3532-1 Spacer (item 50) as shown in **Section N-N** to allow for clearance of the forward wearplate bolts.
- 3.2.5 Install Dart skidtube(s) onto the crosstubes using the hardware that was retained in Section 3.2.1 (items 2, 3, and 4 for OEM crosstubes) when the existing skidtubes were removed. Torque the bolts per the Aircraft Maintenance Manual or relevant STC. All other hardware comes installed on the skidtube kit.
Note: If installing the Dart skidtube(s) with the Dart D350-748-101/-201 Crosstube Kits per Canadian STC SH06-27/FAA STC SR02359NY, items 2, 3 and 4 will be replaced with the hardware provided in the crosstube kit (refer to Canadian STC SH06-27/FAA STC SR02359NY).
- 3.2.6 Complete the installation of the Apical Tri-bag or Cylindrical Float Systems per Apical's instructions.

3.3 Installation of Apical Tri-bag or Cylindrical Float Systems on the D350-636-011/-012/-013/-014 Skidtube Kits at CHG 002 or later and D350-636-015/-016/-017/-018/-215/-216/-217/-218 Skidtube Kits:

- 3.3.1 Complete installation of the skidtube(s) per Section 3.1.
- 3.3.2 Do not install the Apical P/N 20473-7/-8 fitting LH/RH to the Dart skidtube. The Dart D3488-041/-042 Blade Fitting (item 8) replaces this part (see **Detail G**).
- 3.3.3 When installing the Apical Cylindrical or Tri-bag system, install the D3493-1 Washer (item 41) between Apical P/N 20473-6 bolt head and the D2741 Blade (item 9) as shown in **Detail G**.
- 3.3.4 Do not drill additional holes or install Apical spacers for compatibility with the Apical Cylindrical or Tri-bag float system. These holes are already provided in the Dart skidtubes. To access these holes, remove the plugs from the holes (items 30 or 32 as applicable as shown in **Section B-B**).
- 3.3.5 If installing the Apical P/N 20327-100 forward floats onto the Dart D350-636-011/-012 Skidtube Kits, install the Dart D3532-1 Spacer (item 50) as shown in **Section N-N** to allow for clearance of the forward wearplate bolts.

- 3.3.6 If installing Apical Cylindrical Bag Floats on D350-636-015/-016/-215/-216 Skid tubes, remove bolt at **Section T-T** to install the mid-float bag. Re-install using items 91B,95,94,92,93.
- 3.3.7 If installing Apical Tri-Bag Floats on D350-636-017/-018/-217/-218 Skid tubes, remove bolt at **Section U-U** to install mid-float bag. Re-install using items 91C,92A,94A,94,92,93.
- 3.3.8 Complete the installation of the Apical Tri-bag or Cylindrical Float Systems per Apical's instructions.

3.4 Installation of Replacement Wearshoes:

- 3.4.1 Remove existing wearshoes/wearpads/gaskets by removing the AN3 bolts. Begin wearshoe removal from the forward end of the skid tube towards the aft end. On some skid tube installations this will require breaking a layer of sealant between the wearshoes and the skid tube.
- 3.4.2 If present, clean residual sealant off the bottom of the skid tube. Check for corrosion and mechanical damage in accordance with ICA-D350-636 and repair as required.
- 3.4.3 **For D350-636-011/-012/-013/-014 Skid tubes at CHG 002 or earlier**

If installing replacement D2656-13/-35 Wearshoes, D2746 Wearshoes or D2648-3 Wearpads, at the customer's discretion, a new layer of Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant may be applied to the bottom surface of the skid tubes. Install the wearshoes/wearpads beginning from the aft end of the skid tube towards the forward end of the skid tube. All bolts should be sealed with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant before installing. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

Note: If the D2656-13/-35 Wearshoes, D2746 Wearshoes or D2648-3 Wearpads are being replaced, it is recommended that all wearshoes/wearpads be removed and replaced with the D350-636-045 Wearshoe Kit. The D350-636-045 kit can be procured from Dart and installed as outlined in DSI 9413. Adjust weight and balance per Section 4.0.

3.4.4 **For D350-636-011/-012/-013/-014 Skid tubes at CHG 003**

Install the D3535-13/-25/-35 Wearshoes (items 23A, 24A and 25A) and D3537-1 Wearpads (item 22) complete with D3536-13/-25/-35 Gaskets (items 23B, 24B and 25B) using AN3C bolts and associated hardware as shown in **Section A-A**. If required, install replacement D3536-13/-25/-35 Gaskets or install previously removed gaskets from step 3.4.1. Install the wearshoes/wearpads/gaskets beginning from the aft end of the skid tube towards the forward end of the skid tube. All bolts should be sealed with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant before installing. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

Note: The D3536-13/-25/-35 Gaskets must be installed with only the D3535-13/-25/-35 Wearshoes and D3537-1 Wearpads.

Note: To improve the installation of D350-636-011/-012/-013/-014 Skid tubes equipped with stainless steel wearplates/wearpads and gaskets (CHG 003) onto the crosstubes, DSI 9413-011 kit can be procured from Dart to provide the necessary parts and hardware. The DSI 9413-011 kit can be installed as outlined in DSI 9413.

3.4.5 **For D350-636-011/-012/-013/-014 Skid tubes at CHG 004 and subsequent**

Install the D3793-1, D3535-25 and D3793-3 Wearshoes (items 23A, 24A and 25A) and D3537-1 Wearpads and D3791-1 Wearplate (item 22 and 22A) complete with D3794-1, D3536-25 and D3794-3 Gaskets (items 23B, 24B and 25B) using AN3C bolts and associated hardware as shown in **Section P-P** and **Section Q-Q**. If required, install replacement D3794-1/-3 and D3536-25 Gaskets or install previously removed gaskets from step 3.4.1. Install the

wearshoes/wearpads/gaskets beginning from the aft end of the skidtube towards the forward end of the skidtube. All bolts should be sealed with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant before installing. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m). **Note:** The D3536-25 and D3794-1/-3 Gaskets must be installed with only the D3535-25 and D3793-1/-3 Wearshoes, D3537-1 Wearpads and D3791-1 Wearplate.

3.4.6 For D350-636-015/-016/-017/-018/-215/-216/-217/-218 Skidtubes at CHG 001 and subsequent

Install the D4154-041 Wearplate Assembly (item 90) using AN3C bolts and associated hardware as shown in **Section S-S**, **Section T-T**, and **Section U-U** of Figure 3. Torque fasteners 15-25 in-lbs (1.7-2.8 N-m).

3.5 Installation of Replacement Blade Fittings:

Note: The D3488-041/-042 Blade Fitting will replace any previous D2742-1/-2 Blade Fitting installation. The weight and balance of the D350-636-011/-012/-013/-014 Skidtube Kits with the D3488-041/-042 Blade Fitting installed is described in Section 4.0 of this document.

3.5.1 Remove the existing D2742-1/-2 or D3488-041/-042 Blade Fitting by removing any wearshoe bolts used to install the blade fitting (CHG 003 or earlier) and the AN8-35A/AN8C35A bolt (item 5) and associated hardware.

3.5.2 Remove and retain the D2741 Blade (item 9) from the blade fitting.

3.5.3 Apply Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant to the replacement D3488-041/-042 Blade Fitting and insert the blade fitting into the aft end of the skidtube assembly. Ensure all holes are properly aligned.

3.5.4 For D350-636-011/-012/-013/-014 Skidtubes at CHG 003 or earlier, re-install the wearshoes using AN3C7A bolts and AN960C10L washers (items 26B and 27) (refer to **Section A-A**). Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

Note: If installing the D350-636-103/-104 conversion kits, the AN3C7A bolts and AN960C10L washers are provided with the conversion kits.

3.5.5 Re-install the AN8-35A/ AN8C35A bolt (item 5) and associated hardware. Torque the fasteners to 480-690 in-lbs (54.2-78.0 N-m). Apply a bead of Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant at the joint as applicable.

3.5.6 Re-install the D2741 Blade as shown in **Detail D** for non-float installations or **Detail G** for float compatible installations.

Note: For float compatible installations, the D3493-1 Washer (item 43) must be installed between the Apical P/N 20473-6 bolt head and the D2741 Blade (item 9) as shown in **Detail G**

Note: It is recommended that an Antiseize thread compound (lubricant) be applied to the AN8C21A bolts or Apical P/N 20473-6 bolts prior to installation. Lubricant must meet or exceed MIL-A-907.

3.6 Installation of the D350-636-101 Toe Step Kit:

3.6.1 Remove the existing step if required (and retain existing hardware) or remove and retain items 19, 20A, and 20B as shown in **Section F-F**.

3.6.2 Slide step assembly over front end of skidtube and install with hardware (items 19, 20A and 20B) as shown in **Detail H**. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

3.7 Installation of the D350-636-105A/B Wedge Kit:

- 3.7.1 Remove the D2741 blades from the D350-636 skidtube assemblies.
- 3.7.2 Drill 2x Ø0.201 holes per D2741 blade as shown in Figure 4 and deburr. Use pilot holes if present in D2741 blade.
- 3.7.3 Countersink the 2 holes Ø0.385 x 100° from the bottom of each D2741 blade.
- 3.7.4 Position the D3926-1/-3 wedge on the top side of each D2741 blade centered between the left and right sides.
- 3.7.5 Transfer drill 2x Ø0.201 holes from each D2741 blade to the D3926-1/-3 wedge and deburr.
- 3.7.6 Touch up holes in D2741 blade with primer per Aircraft Maintenance Manual.
- 3.7.7 Install the D3926-1/-3 wedge on each D2741 blade using the hardware shown in Figure 4.
- 3.7.8 Re-install the D2741 blade onto the D350-636 skidtube assembly as shown in **Detail D** or **Detail G** as applicable.
- 3.7.9 It is acceptable to install blade tape (abrasion strip material) on the float tube extension to prevent wear between the D3926-1 wedge and the float tube extension.

3.8 Installation of the D350-636-107A/B Cable Guard Kit:

The D350-636-107A Fwd Cable Guard Kit may be installed as follows:

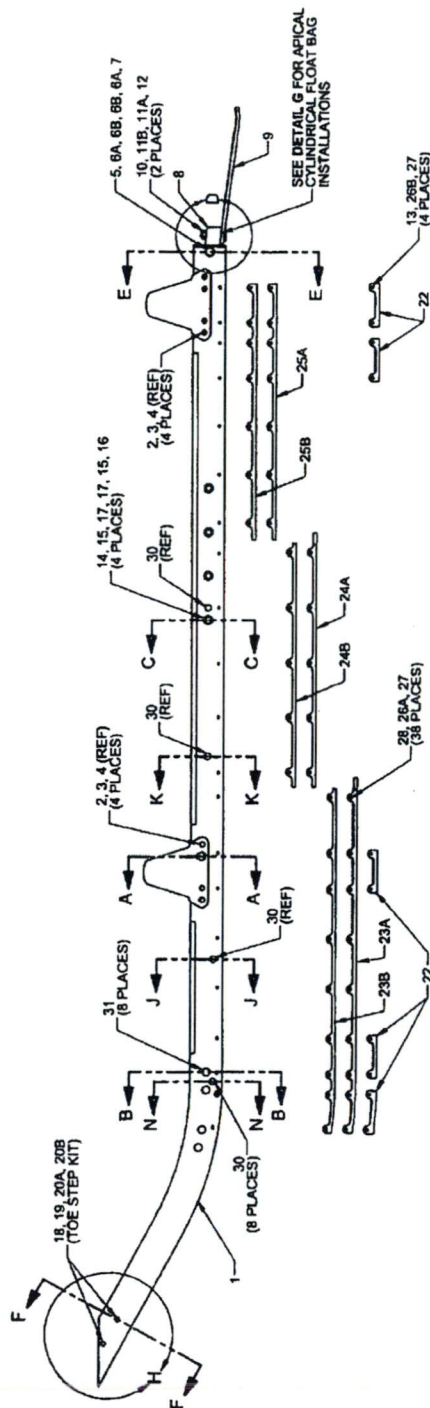
- 3.8.1 Remove the forward 2x 350A41-1027-20 bolts (with OEM crosstubes installed) or 2x AN4-41A bolts and D3501-1 bushings (with Dart crosstubes installed) holding the forward LH saddle in place.
- 3.8.2 Insert the bolts or bolts and bushings through the holes provided in the D3928-1 bracket and reinstall per Aircraft Maintenance Manual or relevant STC.
- 3.8.3 Remove the aft 2x 350A41-1027-20 bolts (with OEM crosstubes installed) or 2x AN4-41A bolts and D3501-1 bushings (with Dart crosstubes installed) holding the forward LH saddle in place.
- 3.8.4 Insert the bolts or bolts and bushings through the holes provided in the D3928-1 bracket and reinstall per Aircraft Maintenance Manual or relevant STC.
- 3.8.5 Position the D3927-1 forward cable guard between the tangs of the D3928-1 bracket centered over the crosstube saddle and against the skidtube. Transfer drill 2x Ø0.257 holes from the D3928-1 bracket to the D3927-1 forward cable guard. Remove D3927-1 forward cable guard and deburr holes.
- 3.8.6 Install the D3927-1 forward cable guard into the brackets using the hardware as shown in Figure 5.

The D350-636-107B Aft Cable Guard Kit may be installed as follows:

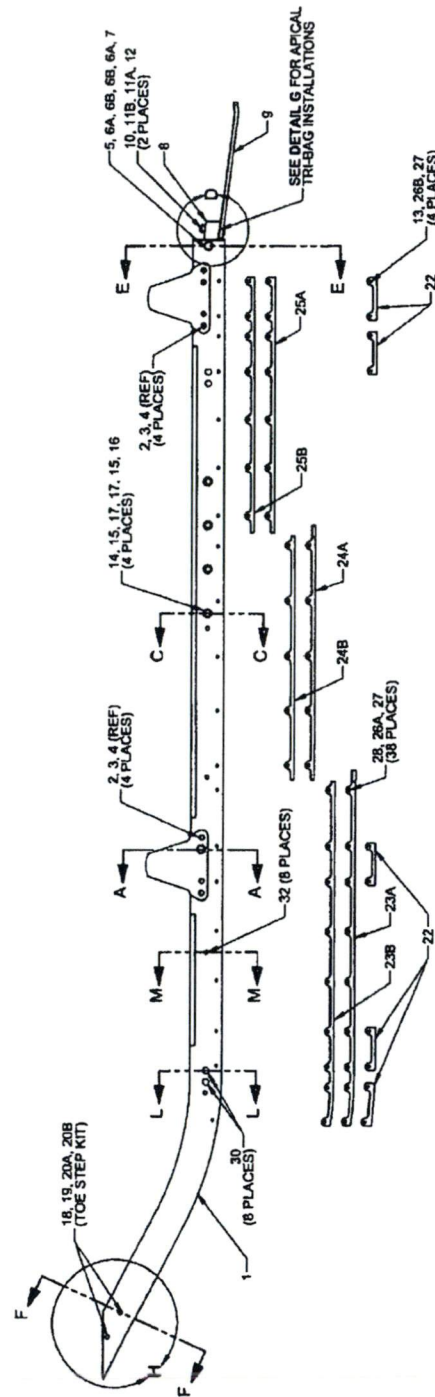
- 3.8.7 Slide the D3927-3 aft cable guard over the outboard ground handling lugs on the LH skidtube.
- 3.8.8 Insert the BLBS-020 pip pin into the hole at the aft end of the D3927-3 cable guard to secure it in place. See Figure 5 for details.

3.9 Installation of the D350-636-047 Run-on Landing Wearplate Kit on the D350-636-011/-012/-013/-014 Skidtubes:

- 3.9.1 Remove the D350-636-011/-012/-013/-014 Skidtubes per Section 32.1 of ICA-D350-636. Remove existing wearplates/wearshoes/wearpads/gaskets. Inspect the bottom of the tube for damage and touch up finish per Section 5.2.12 of ICA-D350-636. Plug existing wearplate inserts using Sikaflex-241/-291 or Proseal 890.
- 3.9.2 Remove the AN8C35A Bolt shown in **Section E-E** to install the run-on landing wearplate assembly. Remove blade fitting to allow removal of swarf from drilling.
- 3.9.3 On both sides of the skidtube, transfer drill qty(4) $\varnothing 0.453$ " holes from the Wearplate Assembly to the Skidtubes. If no corresponding hole is present in the skidtube I-beam, continue hole through the skidtube I-beam to allow passage of the D4170-3 Spacers. Countersink the holes on both sides of the skidtube to $\varnothing 0.490$ " X 45°, deburr, and clean inside of skidtube of swarf. Touch up finish per Item 5.2.12 of ICA-D350-636. Install D4170-3 Spacers with Magnobond 6398. Grind flush as required. Allow magnobond to cure per manufacturer's instructions.
- 3.9.4 Install the D4154-041 Wearplate Assembly using the qty(4) AN3-XXA bolts and associated hardware. Torque AN3-XXA fasteners to 15-25 in-lb (1.7-2.8 N-m). Re-install blade fitting and AN8C35A Bolt through wearplate back on to the skidtube. Torque AN8C35A Bolt to 480-690 in-lbs (54.2-70.0 N-m).
- 3.9.5 Reinstall the Skidtubes on the aircraft per Section 32.2 of ICA-D350-636.
- 3.9.6 Update weight and balance information per Section 4.0 of this document.
- 3.10 Installation of the D350-636-109 Tow Ring Kit:**
- 3.10.1 If installing on D350-636-011/-012/-013/-014 Skidtubes, drill $\varnothing 0.633$ holes in both sides of the skidtube, 2.77" (70mm) from lower toe step hole. See **Figure 3** for reference.
- 3.10.2 If installing on D350-636-015/-016/-017/-018, a $\varnothing 0.188$ thru hole is located below the toe step holes. Remove the AN3 hardware and open to $\varnothing 0.633$ on both sides of the skidtube. See **Figure 3** for reference.
- 3.10.3 Install the D3407-043 Tow Ring using MS21043-4 nut (item 83) and associated hardware (items 81, 82) as shown in **Section R-R**. Torque nuts to 50-70 in-lbs (5.7-7.9 N-m).



D350-636-011/-012 ASSEMBLY
(Aerazur / Apical Cylindrical)



D350-636-013/-014 ASSEMBLY
(Aircruiser / Apical Tri-Bag)

Figure 1: D350-636-011/-012/-013/-014 SKIDTUBE ASSEMBLY AT CHG 003

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: **J**
Date: 13.03.01

Figure 2: D350-636-011/-012-013-014 SKIDTUBE ASSEMBLY
AT CHG 004 AND SUBSEQUENT

Revision: J
Date: 13.03.01

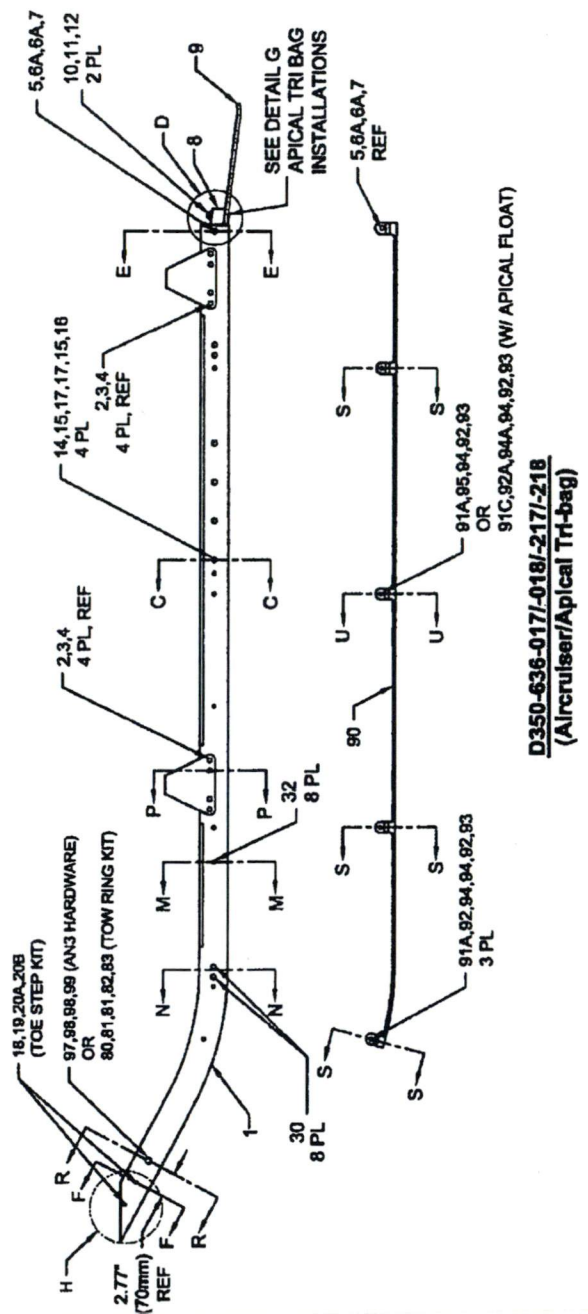
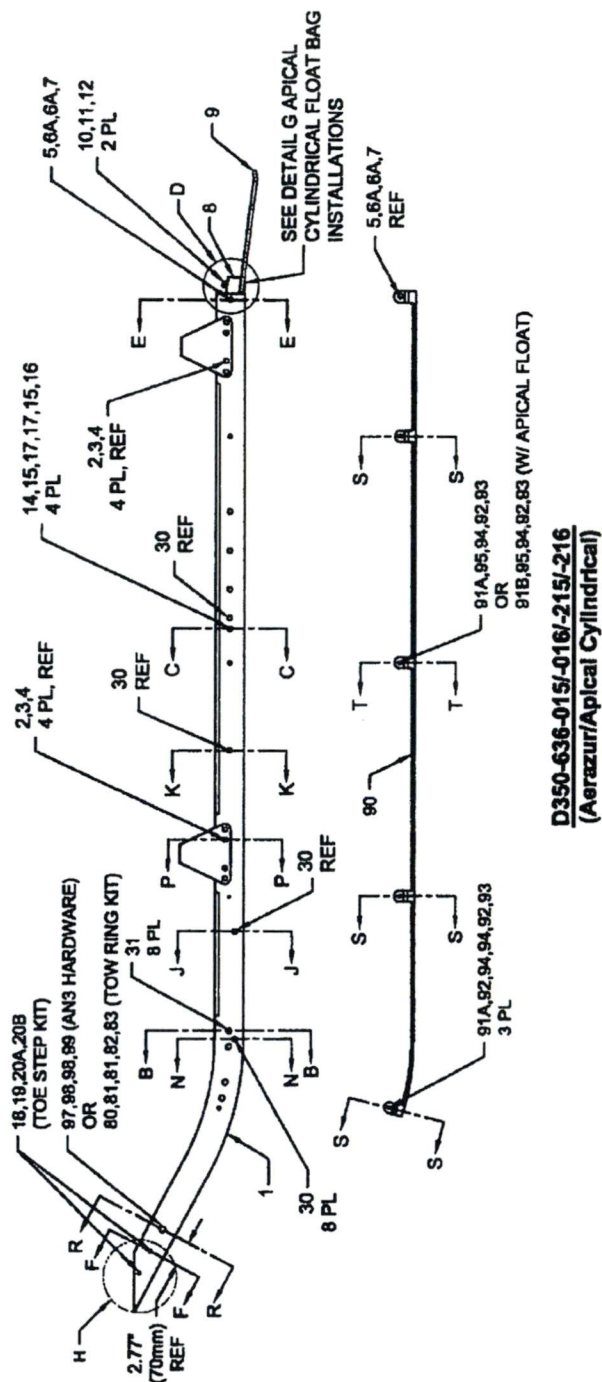
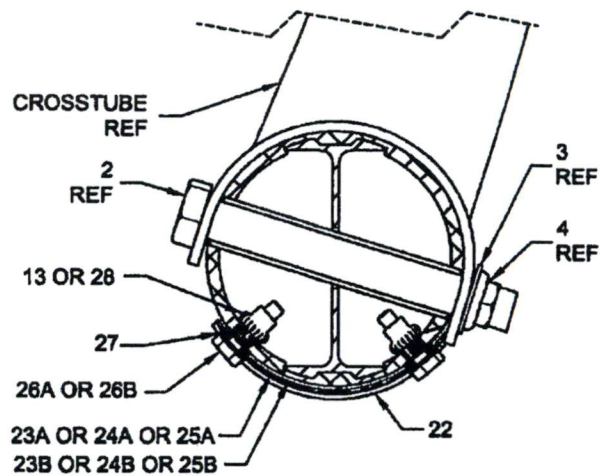


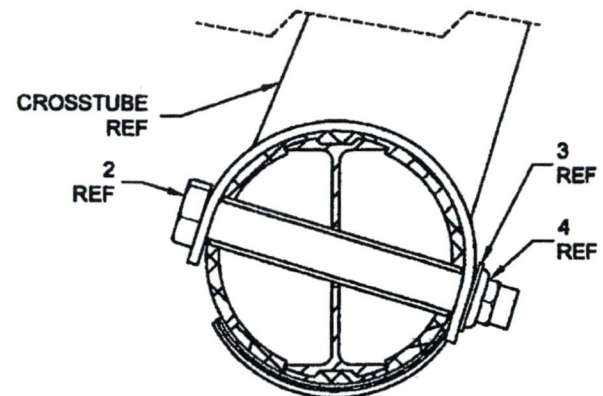
Figure 3: D350-636-015/-016/-017/-018/-215/-216/-217/-218 SKIDTUBE ASSEMBLY

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

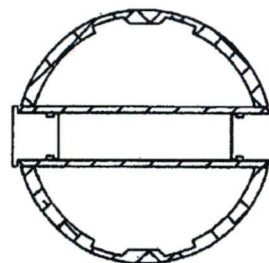
Revision: J
Date: 13.03.01



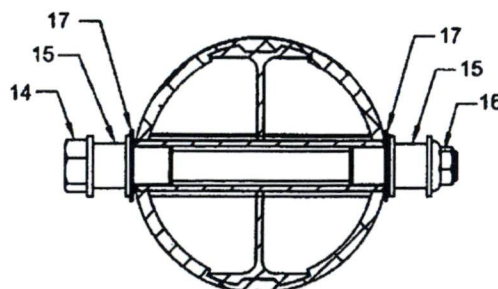
SECTION A-A
(D350-636-011/-012/-013/-014 SKIDTUBES
AT CHG 003 ONLY)



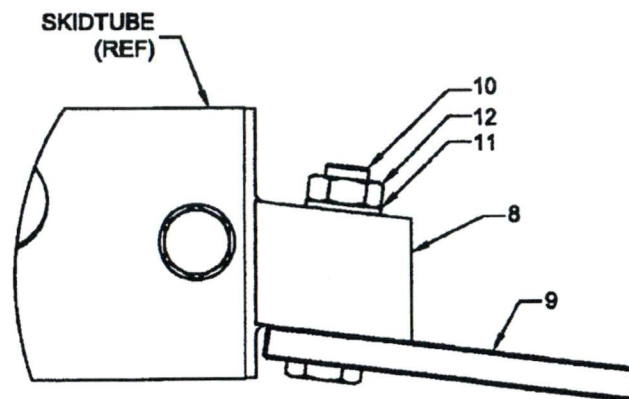
SECTION P-P
(D350-636-011/-012/-013/-014 SKIDTUBES
AT CHG 004 OR SUBSEQUENT)



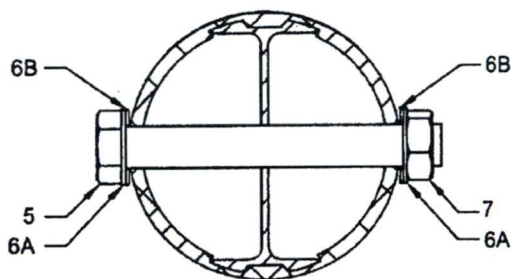
SECTION B-B
(SECTION J-J, K-K, L-L AND M-M SIMILAR)
8 PL PER SKIDTUBE



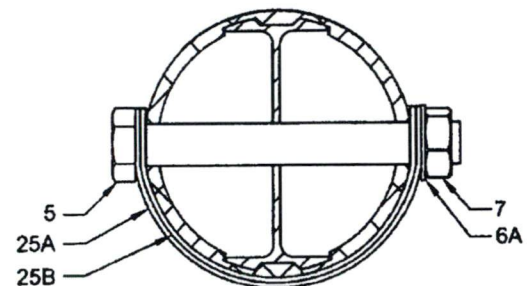
SECTION C-C
4 PL PER SKIDTUBE



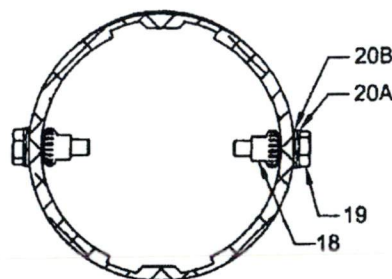
DETAIL D
1 PL PER SKIDTUBE



SECTION E-E
(D350-636-011/-012/-013/-014 SKIDTUBES
AT CHG 003 ONLY)



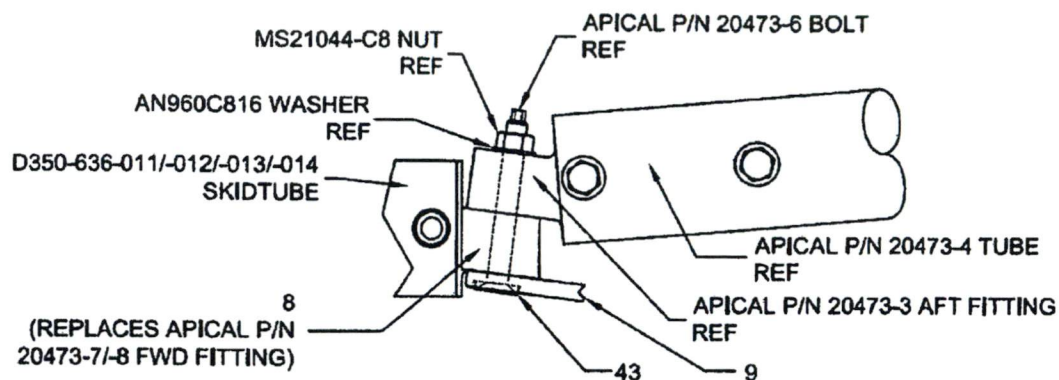
SECTION Q-Q
(D350-636-011/-012/-013/-014 SKIDTUBES
AT CHG 004 OR SUBSEQUENT)



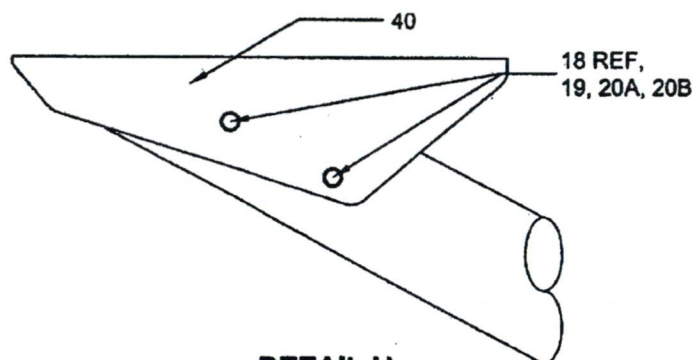
SECTION F-F
2 PL PER SKIDTUBE

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

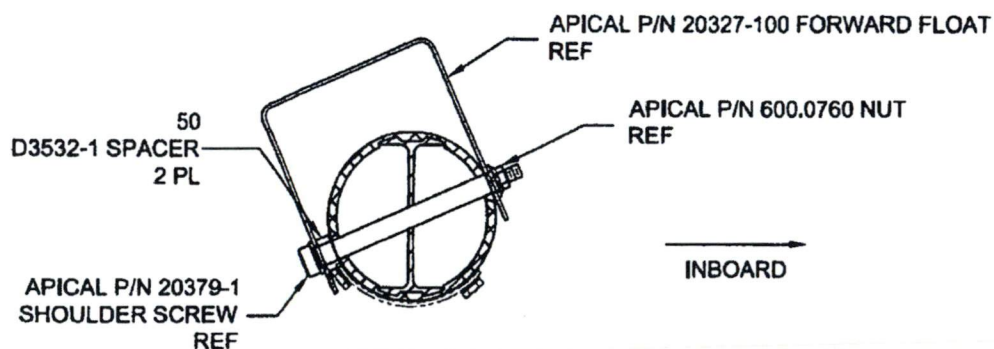
Revision: J
Date: 13.03.01



DETAIL G
(APICAL CYLINDRICAL AND TRI-BAG INSTALLATIONS)
1 PL PER SKIDTUBE



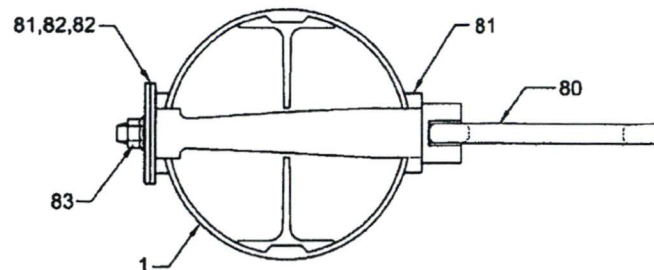
DETAIL H
(D350-636-101 TOE STEP)
1 PL PER SKIDTUBE



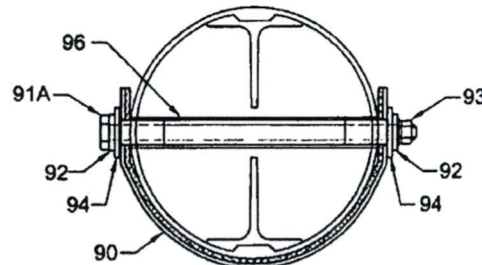
SECTION N-N
(LH SHOWN, RH OPPOSITE)
(D350-636-011/-012 WITH APICAL CYLINDRICAL FLOATS ONLY)

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J
Date: 13.03.01



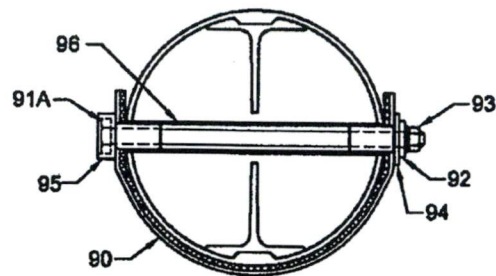
SECTION R-R
SHOWN WITH DRILLED Ø0.633" HOLE &
D350-636-109 TOW RING KIT



SECTION S-S
D350-636-015/-016/-017/-018/-215/-216/-217/-218
SKIDTUBES, 3 PL

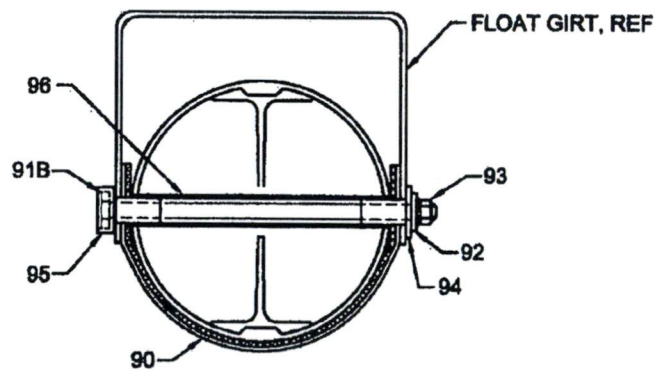
• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J
Date: 13.03.01



**WITHOUT APICAL CYLINDRICAL BAG
FLOATS**

OR



WITH APICAL CYLINDRICAL BAG FLOATS

SECTION T-T

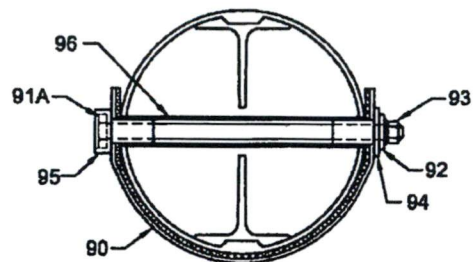
D350-636-015/-016/-215/-216 SKIDTUBES

1 PL

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

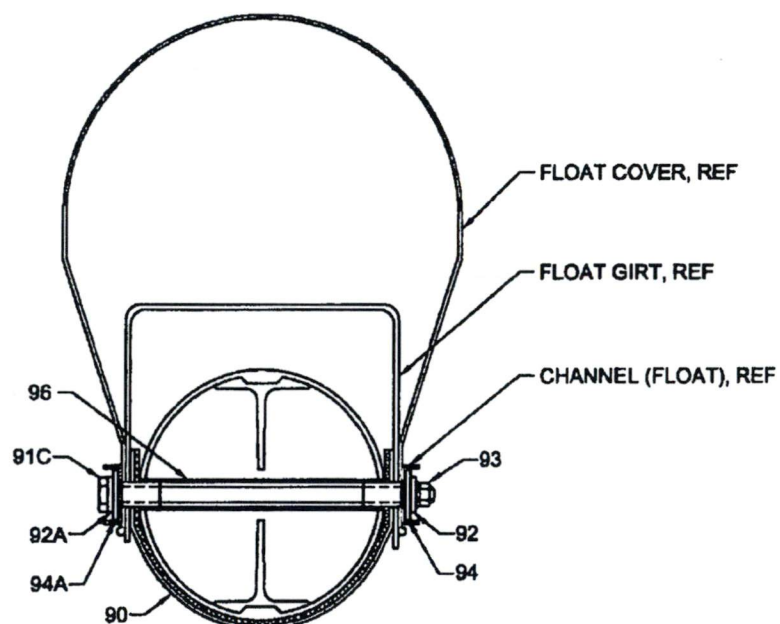
Revision: **J**

Date: 13.03.01



WITHOUT APICAL TRI BAG FLOATS

OR



WITH APICAL TRI BAG FLOATS

SECTION U-U

D350-636-017/-018/-217/-218 SKIDTUBES

1 PL

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J
Date: 13.03.01

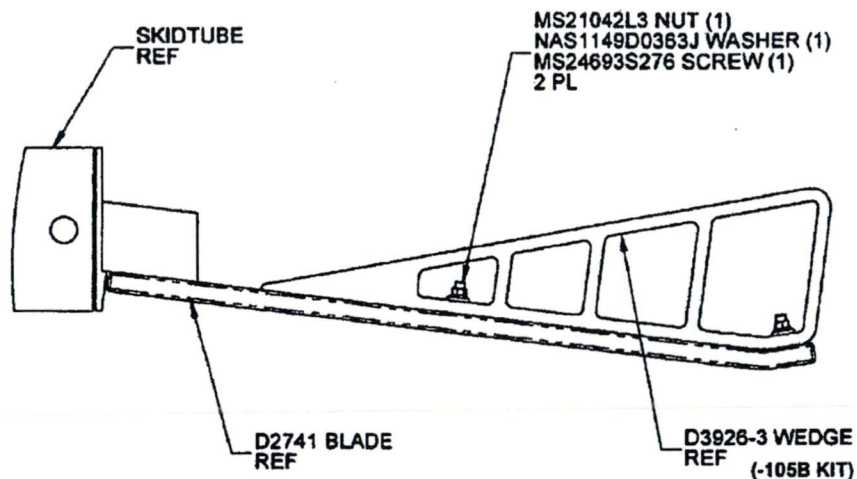
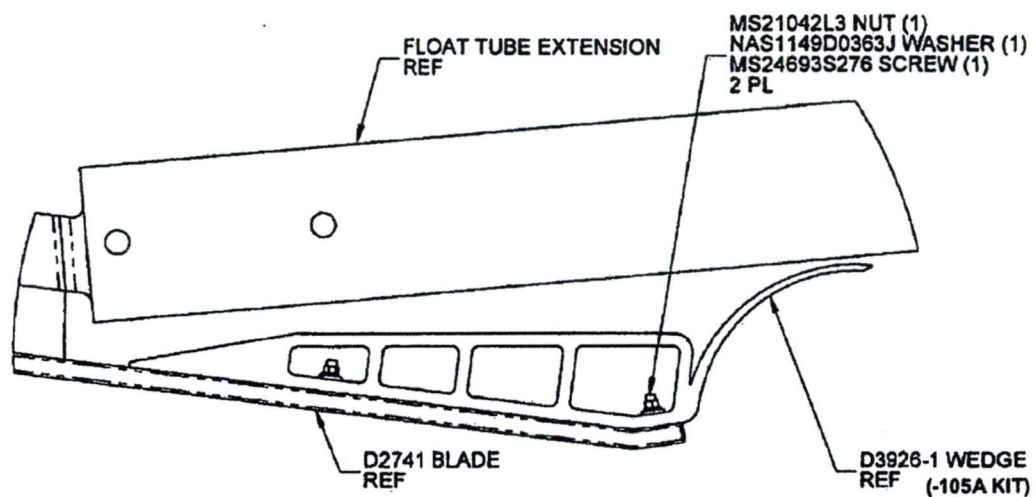
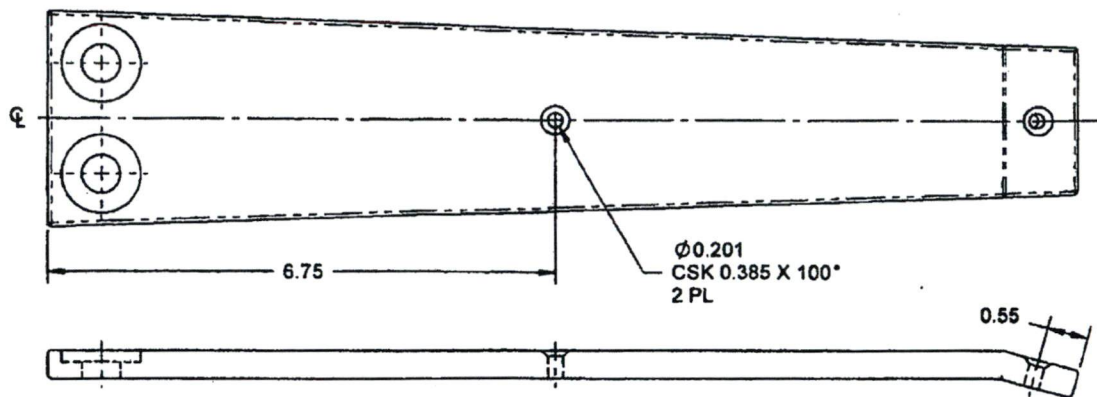


Figure 4: D350-636-105A/-105B WEDGE KIT INSTALLATION

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J
Date: 13.03.01

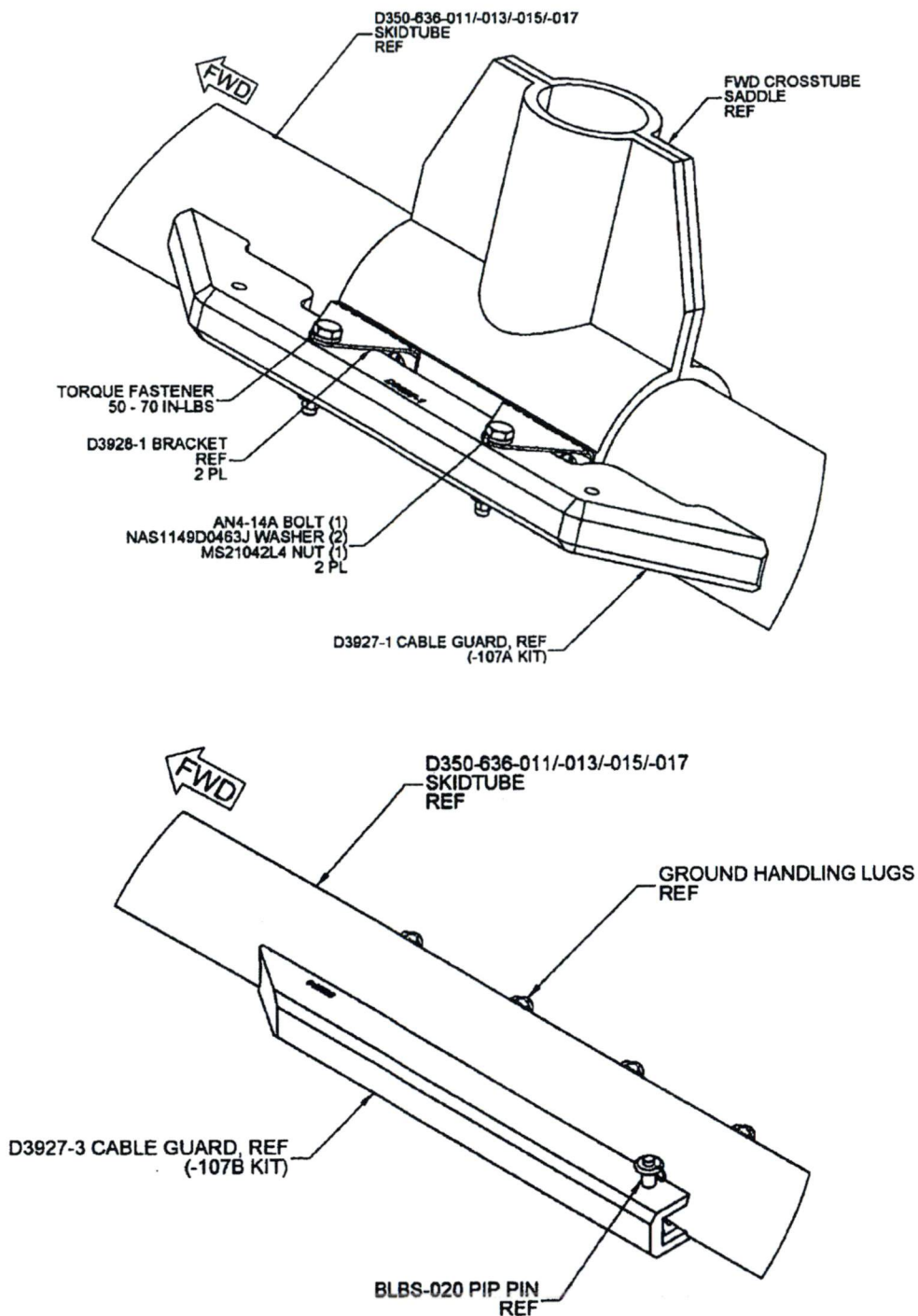


Figure 5: D350-636-107A/-107B CABLE GUARD KIT INSTALLATION

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J
Date: 13.03.01

4.0 WEIGHT AND BALANCE

The following weight and balance information is for the replacement Dart parts. The weight and balance of the skid tubes that are being removed from the aircraft is the responsibility of the installer.

Installation	Weight	LONGITUDINAL		LATERAL (STD GEAR)		LATERAL (HIGH GEAR)	
		Arm	Moment	Arm	Moment	Arm	Moment
D350-636-011 LH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	30.1 lb 13.7 kg	128.6 in 3.27 m	3871 in-lb 44.8 m-kg	-39.3 in -1.00 m	-1183 in-lb -13.7 m-kg	-41.3 in -1.05 m	-1243 in-lb -14.4 m-kg
D350-636-012 RH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	30.1 lb 13.7 kg	128.6 in 3.27 m	3871 in-lb 44.8 m-kg	+39.3 in +1.00 m	+1183 in-lb +13.7 m-kg	+41.3 in +1.05 m	+1243 in-lb +14.4 m-kg
D350-636-013 LH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	30.1 lb 13.7 kg	128.6 in 3.27 m	3871 in-lb 44.8 m-kg	-39.3 in -1.00 m	-1183 in-lb -13.7 m-kg	-41.3 in -1.05 m	-1243 in-lb -14.4 m-kg
D350-636-014 RH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	30.1 lb 13.7 kg	128.6 in 3.27 m	3871 in-lb 44.8 m-kg	+39.3 in +1.00 m	+1183 in-lb +13.7 m-kg	+41.3 in +1.05 m	+1243 in-lb +14.4 m-kg
D350-636-015 LH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	32.5 lb 14.7 kg	124.1 in 3.15 m	4033 in-lb 46.3 m-kg	-39.3 in -1.00 m	-1277 in-lb -14.7 m-kg	-41.3 in -1.05 m	-1342 in-lb -15.4 m-kg
D350-636-016 RH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	32.5 lb 14.7 kg	124.1 in 3.15 m	4033 in-lb 46.3 m-kg	+39.3 in +1.00 m	+1277 in-lb +14.7 m-kg	+41.3 in +1.05 m	+1342 in-lb +15.4 m-kg
D350-636-017 LH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	32.5 lb 14.7 kg	124.1 in 3.15 m	4033 in-lb 46.3 m-kg	-39.3 in -1.00 m	-1277 in-lb -14.7 m-kg	-41.3 in -1.05 m	-1342 in-lb -15.4 m-kg
D350-636-018 RH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	32.5 lb 14.7 kg	124.1 in 3.15 m	4033 in-lb 46.3 m-kg	+39.3 in +1.00 m	+1277 in-lb +14.7 m-kg	+41.3 in +1.05 m	+1342 in-lb +15.4 m-kg
D350-636-215 LH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	34.5 lb 15.6 kg	123.0 in 3.13 m	4244 in-lb 48.8 m-kg	-39.3 in -1.00 m	-1356 in-lb -15.6 m-kg	-41.3 in -1.05 m	-1425 in-lb -16.4 m-kg
D350-636-216 RH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	34.5 lb 15.6 kg	123.0 in 3.13 m	4244 in-lb 48.8 m-kg	+39.3 in +1.00 m	+1356 in-lb +15.6 m-kg	+41.3 in +1.05 m	+1425 in-lb +16.4 m-kg
D350-636-217 LH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	34.5 lb 15.6 kg	123.0 in 3.13 m	4244 in-lb 48.8 m-kg	-39.3 in -1.00 m	-1356 in-lb -15.6 m-kg	-41.3 in -1.05 m	-1425 in-lb -16.4 m-kg
D350-636-218 RH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	34.5 lb 15.6 kg	123.0 in 3.13 m	4244 in-lb 48.8 m-kg	+39.3 in +1.00 m	+1356 in-lb +15.6 m-kg	+41.3 in +1.05 m	+1425 in-lb +16.4 m-kg
*D350-636-045 WEARSHOE MODIFICATION KIT	0.5 lb 0.2 kg	125.5 in 3.19 m	69 in-lb 0.80 m-kg	± 39.3 in ± 1.00 m	± 22 in-lb ± 0.25 m-kg	± 41.3 in ± 1.05 m	± 23 in-lb ± 0.26 m-kg
**D350-636-047 RUN-ON WEARPLATE KIT	3.3 lb 1.5 kg	119.4 in 3.03 m	394 in-lb 4.5 m-kg	± 39.3 in ± 1.00 m	± 130 in-lb ± 1.5 m-kg	± 41.3 in ± 1.05 m	± 136 in-lb ± 1.6 m-kg

(CONTINUED ON NEXT PAGE)

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR
COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J

Date: 13.03.01

(CONTINUED FROM PREVIOUS PAGE)

Installation	Weight	LONGITUDINAL		LATERAL (STD GEAR)		LATERAL (HIGH GEAR)	
		Arm	Moment	Arm	Moment	Arm	Moment
D350-636-101	1.0 lb	60.7 in	61 in-lb	± 39.3 in	± 39.3 in-lb	± 41.3 in	± 41.3 in-lb
TOE STEP KIT	0.5 kg	1.54 m	0.8 m-kg	± 1.00 m	± 0.5 m-kg	± 1.05 m	± 0.53 m-kg
D350-636-105A/B	0.5 lb	178.3 in	89 in-lb	0.0 in	0.0 in-lb	0.0 in	0.0 in-lb
WEDGE KIT	0.2 kg	4.53 m	1.0 m-kg	0.00 m	0.0 m-kg	0.0 m	0.0 m-kg
D350-636-107	1.5 lb	113.0 in	170 in-lb	± 39.8 in	± 60 in-lb	± 42.8 in	± 64 in-lb
CABLE GUARD KIT	0.7 kg	2.87 m	2.0 m-kg	± 1.01 m	± 0.7 m-kg	± 1.09 m	± 0.8 m-kg
D350-636-107A	0.7 lb	106.3 in	74 in-lb	± 40.9 in	± 29 in-lb	± 42.9 in	± 30 in-lb
FWD CABLE GUARD	0.3 kg	2.70 m	0.8 m-kg	± 1.04 m	± 0.3 m-kg	± 1.09 m	± 0.3 m-kg
D350-636-107B	0.8 lb	137.5 in	117 in-lb	± 40.2 in	± 34 in-lb	± 42.2 in	± 36 in-lb
AFT CABLE GUARD	0.4 kg	3.49 m	1.4 m-kg	± 1.02 m	± 0.4 m-kg	± 1.07 m	± 0.4 m-kg
D350-636-109	0.6 lb	64.7 in	39 in-lb	± 37.7 in	± 23 in-lb	± 39.7 in	± 24 in-lb
TOW RING KIT	0.3 kg	1.64 m	0.5 m-kg	± 0.96 m	± 0.3 m-kg	± 1.01 m	± 0.3 m-kg

* Weight added to relevant skidtube installation when D350-636-045 Wearshoe Modification Kit is installed as replacement wearshoes on D350-636-011/-012/-013/-014 Skidtube Installations at CHG 002 or earlier.

There is a negligible weight change when the D350-636-045 Wearshoe Modification Kit is installed as replacement wearshoes on D350-636-011/-012/-013/-014 Skidtube Installations at CHG 003.

** Weight added to relevant skidtube installation when D350-636-047 Wearshoe Modification Kit is installed as replacement wearshoes on D350-636-011/-012/-013/-014 Skidtube.

5.0 PARTS LIST

(D350-636-011/-012/-013/-014 SKIDTUBES AT CHANGE 003)

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -043	Part Number	Description
	X					D350-636-011	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
		X				D350-636-012	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
			X			D350-636-013	SKIDTUBE INSTALLATION, LH AIRCRAISER/ APICAL TRI-BAG FLOAT COMPATIBLE
				X		D350-636-014	SKIDTUBE INSTALLATION, RH AIRCRAISER/ APICAL TRI-BAG FLOAT COMPATIBLE
					X	D350-636-043	WEARSHOE KIT (REPLACES -041 KIT)
1	1					D2750-041	SKIDTUBE ASSEMBLY, LH
1		1				D2750-042	SKIDTUBE ASSEMBLY, RH
1			1			D2750-043	SKIDTUBE ASSEMBLY, LH
1				1		D2750-044	SKIDTUBE ASSEMBLY, RH
*1	1					D2750-1	SKIDTUBE WELDMENT, LH
*1		1				D2750-2	SKIDTUBE WELDMENT, RH
*1			1			D2750-3	SKIDTUBE WELDMENT, LH
*1				1		D2750-4	SKIDTUBE WELDMENT, RH
**2	8	8	8	8		350A41-1027-20	SCREW
**3	8	8	8	8		23119AG120LE	WASHER
**4	8	8	8	8		22541N120	NUT
*5	1	1	1	1		AN8C35A	BOLT (REPLACES AN8-35A)
*6A	2	2	2	2		AN960C816L	WASHER (REPLACES AN960JD816)
*6B	2	2	2	2		NAS1515H8L	WASHER
*7	1	1	1	1		MS21083C8	NUT (REPLACES MS21083N8)
*8	1		1			D3488-041	BLADE FITTING, LH (REPLACES D2742-1)
*8		1		1		D3488-042	BLADE FITTING, RH (REPLACES D2742-2)
9	1	1	1	1		D2741	BLADE
10	2	2	2	2		AN8C21A	BOLT (REPLACES AN8-16A)
11A	2	2	2	2		AN960C816L	WASHER (REPLACES AN960JD816)
11B	2	2	2	2		D3672-13	WASHER
12	2	2	2	2		MS21083C8	NUT (REPLACES MS21083N8)
*13	4	4	4	4		ALS4-1032-225	INSERT
*14	4	4	4	4		AN6C44A	BOLT (REPLACES AN6-44A)
*15	8	8	8	8		D2745	BUSHING
*16	4	4	4	4		MS21043-6	NUT (REPLACES MS21042L6)
*17	8	8	8	8		D3631-1	WASHER (REPLACES NAS1515H8L)
*18	4	4	4	4		ALS4-1032-225	INSERT (REPLACES NAS1330S3KB166)
*19	4	4	4	4		AN3C6A	BOLT (REPLACES AN3-6A)

(CONTINUED ON NEXT PAGE)

(CONTINUED FROM PREVIOUS PAGE)

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -043	Part Number	Description
*20A	4	4	4	4		AN960C10L	WASHER (REPLACES AN960JD10)
*20B	4	4	4	4		NAS1515H3L	WASHER (REPLACES AN960JD10)
*22	5	5	5	5	5	D3537-1	WEARPAD (REPLACES D2648-3)
*23A	1	1	1	1	1	D3535-13	WEARSHOE (REPLACES D2656-13)
*23B	1	1	1	1	1	D3536-13	GASKET
*24A	1	1	1	1	1	D3535-25	WEARSHOE (REPLACES D2746)
*24B	1	1	1	1	1	D3536-25	GASKET
*25A	1	1	1	1	1	D3535-35	WEARSHOE (REPLACES D2656-35)
*25B	1	1	1	1	1	D3536-35	GASKET
*26A	38	38	38	38	38	AN3C5A	BOLT (REPLACES AN3-5A)
*26B	4	4	4	4	4	AN3C7A	BOLT (REPLACES AN3-7A)
*27	42	42	42	42	42	AN960C10L	WASHER (REPLACES AN960JD10)
*28	38	38	38	38		ALS4-1032-225	INSERT (REPLACES NAS1330S3KB166)
*30	8	8	8	8		D3492-041	PLUG ASSEMBLY
*31	8	8				D3492-043	PLUG ASSEMBLY
*32			8	8		D3492-045	PLUG ASSEMBLY
***43	2	2	2	2		D3493-1	WASHER
50	2	2				D3532-1	SPACER

* PART OF D2750-041/-042 OR D2750-043/-044 ASSEMBLY

** TO BE SUPPLIED BY CUSTOMER

*** ONLY INSTALLED IF INSTALLING AN APICAL FLOAT SYSTEM

6.0 PARTS LIST

(D350-636-011/-012/-013/-014 SKIDTUBES AT CHANGE 004 OR LATER)

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -045	Part Number	Description
	X					D350-636-011	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
		X				D350-636-012	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
			X			D350-636-013	SKIDTUBE INSTALLATION, LH AIRCRAISER/ APICAL TRI-BAG FLOAT COMPATIBLE
				X		D350-636-014	SKIDTUBE INSTALLATION, RH AIRCRAISER/ APICAL TRI-BAG FLOAT COMPATIBLE
					X	D350-636-045	WEARSHOE KIT
1	1					D2750-041	SKIDTUBE ASSEMBLY, LH
1		1				D2750-042	SKIDTUBE ASSEMBLY, RH
1			1			D2750-043	SKIDTUBE ASSEMBLY, LH
1				1		D2750-044	SKIDTUBE ASSEMBLY, RH
*1	1					D2750-1	SKIDTUBE WELDMENT, LH
*1		1				D2750-2	SKIDTUBE WELDMENT, RH
*1			1			D2750-3	SKIDTUBE WELDMENT, LH
*1				1		D2750-4	SKIDTUBE WELDMENT, RH
**2	8	8	8	8		350A41-1027-20	SCREW
**3	8	8	8	8		23119AG120LE	WASHER
**4	8	8	8	8		22541N120	NUT
*5	1	1	1	1		AN8C35A	BOLT
*6A	1	1	1	1		AN960C816L	WASHER
*7	1	1	1	1		MS21083C8	NUT
*8	1		1			D3488-041	BLADE FITTING, LH
*8		1		1		D3488-042	BLADE FITTING, RH
9	1	1	1	1		D2741	BLADE
10	2	2	2	2		AN8C21A	BOLT
11	2	2	2	2		AN960JD816	WASHER (OR NAS1149DO863J)
12	2	2	2	2		MS21083C8	NUT
*14	4	4	4	4		AN6C44A	BOLT
*15	8	8	8	8		D2745	BUSHING
*16	4	4	4	4		MS21043-6	NUT
*17	8	8	8	8		D3631-1	WASHER
*18	4	4	4	4		ALS4-1032-225	INSERT
*19	4	4	4	4		AN3C6A	BOLT
*20A	4	4	4	4		AN960C10L	WASHER
*20B	4	4	4	4		NAS1515H3L	WASHER

(CONTINUED ON NEXT PAGE)

(CONTINUED FROM PREVIOUS PAGE)

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -045	Part Number	Description
*22	3	3	3	3	3	D3537-1	WEARPAD
*22A	1	1	1	1	1	D3781-1	WEARPLATE (REPLACES D3537-1)
*23A	1	1	1	1	1	D3783-1	WEARSHOE (REPLACES D3535-13)
*23B	1	1	1	1	1	D3784-1	GASKET (REPLACES D3536-13)
*24A	1	1	1	1	1	D3535-25	WEARSHOE
*24B	1	1	1	1	1	D3536-25	GASKET
*25A	1	1	1	1	1	D3783-3	WEARSHOE (REPLACES D3535-35)
*25B	1	1	1	1	1	D3784-3	GASKET (REPLACES D3536-35)
*26A	34	34	34	34	34	AN3C5A	BOLT
*27	34	34	34	34	34	AN980C10L	WASHER
*28	34	34	34	34		ALS4-1032-225	INSERT
*30	8	8	8	8		D3492-041	PLUG ASSEMBLY
*31	8	8				D3492-043	PLUG ASSEMBLY
*32			8	8		D3492-045	PLUG ASSEMBLY
***43	2	2	2	2		D3493-1	WASHER
50	2	2				D3532-1	SPACER

* PART OF D2750-041/-042 OR D2750-043/-044 ASSEMBLY

** TO BE SUPPLIED BY CUSTOMER

*** ONLY INSTALLED IF INSTALLING AN APICAL FLOAT SYSTEM

7.0 PARTS LIST

(D350-636-101/-103/-104/-105A/-105B/-107/-107A/-107B/-109 KITS)

Item	Qty -101	Qty -103	Qty -104	Qty -105A	Qty -105B	Qty -107	Qty -107A	Qty -107B	Qty -109	Part Number	Description
	X									D350-636-101	TOE STEP KIT (LH/RH)
		X								D350-636-103	APICAL FLOAT CONVERSION KIT, LH
			X							D350-636-104	APICAL FLOAT CONVERSION KIT, RH
				X						D350-636-105A	WEDGE KIT
					X					D350-636-105B	WEDGE KIT
						X				D350-636-107	CABLE GUARD KIT
						1	X			D350-636-107A	FWD CABLE GUARD
						1		X		D350-636-107B	AFT CABLE GUARD
									X	D350-636-109	TOW RING KIT
8		1								D3488-041	BLADE FITTING, LH (REPLACES D2742-1)
8			1							D3488-042	BLADE FITTING, RH (REPLACES D2742-2)
10		2	2							AN8C21A	BOLT (REPLACES AN8-18A)
11		2	2							AN980JD816	WASHER (OR NAS1149D0863J)
12		2	2							MS21083C8	NUT (REPLACES MS21083N8)
26B		4	4							AN3C7A	BOLT (REPLACES AN3-7A)
27		4	4							AN980C10L	WASHER (REPLACES AN980JD10)
40	1									D3487-1	TOE STEP ASSEMBLY
43		2	2							D3493-1	WASHER
50		2	2							D3532-1	WASHER
60				2						D3926-1	WEDGE
61					2					D3926-3	WEDGE
62				4	4					MS21042L3	NUT
63				4	4					MS24693S276	SCREW
64				4	4					NAS1149D0363J	WASHER
70							1			D3927-1	FWD CABLE GUARD
71								1		D3927-3	AFT CABLE GUARD
72							2			D3928-1	BRACKET
73							2			AN4-14A	BOLT
74								1		BLBS-020	PIP PIN
75							2			MS21042L4	NUT
76							4			NAS1149D0463J	WASHER
80									1	D3407-043	TOW RING ASSEMBLY
81									2	D3417-9	WASHER
82									2	D3456-1	WASHER
83									1	MS21043-4	NUT

8.0 PARTS LIST (D350-636-015/-016/-017/-018/-047 KITS)

Item	Qty -015	Qty -016	Qty -017	Qty -018	Qty -047	Part Number	Description
	X					D350-636-015	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE W/ TRAINING WEARPLATE
		X				D350-636-016	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE W/ TRAINING WEARPLATE
			X			D350-636-017	SKIDTUBE INSTALLATION, LH AIRCRAUSER/ APICAL TRI-BAG FLOAT COMPATIBLE W/ TRAINING WEARPLATE
				X		D350-636-018	SKIDTUBE INSTALLATION, RH AIRCRAUSER/ APICAL TRI-BAG FLOAT COMPATIBLE W/ TRAINING WEARPLATE
					X	D350-636-047	TRAINING WEARPLATE KIT (LH/RH)
1	1					D4168-041	SKIDTUBE ASSEMBLY, LH
1		1				D4168-042	SKIDTUBE ASSEMBLY, RH
1			1			D4168-043	SKIDTUBE ASSEMBLY, LH
1				1		D4168-044	SKIDTUBE ASSEMBLY, RH
*1	1					D4168-1	SKIDTUBE WELDMENT, LH
*1		1				D4168-2	SKIDTUBE WELDMENT, RH
*1			1			D4168-3	SKIDTUBE WELDMENT, LH
*1				1		D4168-4	SKIDTUBE WELDMENT, RH
**2	8	8	8	8		350A41-1027-20	SCREW
**3	8	8	8	8		2311BAG120LE	WASHER
**4	8	8	8	8		22541N120	NUT
*5	1	1	1	1		AN8C35A	BOLT
*6A	1	1	1	1		AN960C816L	WASHER (OR NAS1149CO832R)
*7	1	1	1	1		MS21083C8	NUT
*8	1		1			D3488-041	BLADE FITTING, LH
*8		1		1		D3488-042	BLADE FITTING, RH
9	1	1	1	1		D2741	BLADE
10	2	2	2	2		AN8C21A	BOLT
11	2	2	2	2		AN960JD816	WASHER (OR NAS1149CO863J)
12	2	2	2	2		MS21083C8	NUT
*14	4	4	4	4		AN8C44A	BOLT
*15	8	8	8	8		D2745	BUSHING
*16	4	4	4	4		MS21043-6	NUT
*17	8	8	8	8		D3631-1	WASHER
*18	4	4	4	4		ALS4-1032-225	INSERT
*19	4	4	4	4		AN3C6A	BOLT
*20A	4	4	4	4		AN960C10L	WASHER (OR NAS1149CO332R)
*20B	4	4	4	4		NAS1515H3L	WASHER
*30	8	8	8	8		D3492-041	PLUG ASSEMBLY
*31	8	8				D3492-043	PLUG ASSEMBLY
*32			8	8		D3492-045	PLUG ASSEMBLY

(CONTINUED ON NEXT PAGE)

(CONTINUED FROM PREVIOUS PAGE)

Item	Qty -015	Qty -016	Qty -017	Qty -018	Qty -047	Part Number	Description
***43	2	2	2	2		D3483-1	WASHER
*90	1	1	1	1	1	D4154-041	WEARPLATE ASSEMBLY
*91A	4	4	4	4	4	AN3C36A	BOLT ¹
91B	1	1	1	1	1	AN3C37A	BOLT ²
91C	1	1	1	1	1	AN3C42A	BOLT ³
*92	7	7	7	7	8	AN960C10	WASHER (OR NAS1149CO363R)
92A			1	1		AN960C10	WASHER (OR NAS1149CO363R) ³
*93	4	4	4	4	4	MS21043-3	NUT
*94	7	7	7	7	8	D3873-1	BUSHING
94A			1	1		D3873-1	BUSHING ³
*95	1	1	1	1	1	D4171-1	BUSHING ⁴
96					4	D4170-3	SPACER
*97	1	1	1	1	1	AN3C34A	BOLT
*98	2	2	2	2	2	AN960C10	WASHER (OR NAS1149CO363R)
*99	1	1	1	1	1	MS21043-3	NUT

* PART OF D4168-041/-042/-043/-044

** TO BE SUPPLIED BY CUSTOMER

*** ONLY INSTALLED IF INSTALLING AN APICAL FLOAT SYSTEM

¹ QTY USED MAY BE LESS ON SKIDTUBES WITH APICAL CYLINDRICAL OR TRI-BAG FLOATS² HARDWARE USED ON THE SKIDTUBES INSTALLED WITH APICAL CYLINDRICAL BAG FLOATS³ HARDWARE USED ON THE SKIDTUBES INSTALLED WITH APICAL TRI-BAG FLOATS⁴ HARDWARE NOT USED ON THE SKIDTUBES INSTALLED WITH APICAL TRI-BAG FLOATS

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: J

Date: 13.03.01

9.0 PARTS LIST (D350-636-215/-216/-217/-218 KITS)

Item	Qty -215	Qty -216	Qty -217	Qty -218	Part Number	Description
	X				D350-636-215	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE DELUXE
		X			D350-636-216	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE DELUXE
			X		D350-636-217	SKIDTUBE INSTALLATION, LH AIRCUISE/ APICAL TRI-BAG FLOAT COMPATIBLE DELUXE
				X	D350-636-218	SKIDTUBE INSTALLATION, RH AIRCUISE/ APICAL TRI-BAG FLOAT COMPATIBLE DELUXE
	1				D350-636-015	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
		1			D350-636-016	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
			1		D350-636-017	SKIDTUBE INSTALLATION, LH AIRCUISE/ APICAL TRI-BAG FLOAT COMPATIBLE
				1	D350-636-018	SKIDTUBE INSTALLATION, RH AIRCUISE/ APICAL TRI-BAG FLOAT COMPATIBLE
	1	1	1	1	D350-636-101	TOE STEP KIT (LH/RH)
	1	1	1	1	D350-636-105A	WEDGE KIT
	1	1	1	1	D350-636-109	TOW RING KIT



ICA-D350-636

Page 1 of 37

DART AEROSPACE USA, INC
19717 62nd Ave. South
Suite E-101
Kent, WA 98032

Tel: 1 613 632 5200
Fax: 1 613 632 5246

e-mail: heli@dartaero.com
<http://www.dartaero.com>

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

ICA-D350-636

Skidtube Installation

EUROCOPTER AS 350/355 MODELS

Prepared By:

A handwritten signature in black ink, appearing to read "S. Madeira".

S. Madeira

Checked By:

A handwritten signature in black ink, appearing to read "M. Bellavance".

M. Bellavance

Mechanical Designer

Released By:

A handwritten signature in black ink, appearing to read "D. Shepherd".

D. Shepherd, P. Eng.

DE #02

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

REVISION RECORD

Revision No.	Issue Date	Description	Date Inserted	Inserted By
0	10.06.16	New Issue		
1	10.07.26	Add D350-636-015/-016/-017/-018/-047 kits Add D350-636-215/-216/-217/-218 Kits		
2	10.10.25	-047 kit now uses D4170-3 (was -1)		
3	13.02.21	Incorporate DSI 9570; Update Weight & Balance for D350-636-047; Add 1X D3456-1 to D350-636-109; Update Section R-R		

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

LIST OF EFFECTIVE PAGES

DESCRIPTION	PAGE(S)	REVISION
COVER	1	3
REVISION RECORD	2	3
LIST OF EFFECTIVE PAGES	3	3
TABLE OF CONTENTS	4	3
CHAPTER 0 – INTRODUCTION	5	3
CHAPTER 0 – INTRODUCTION	6	3
CHAPTER 0 – INTRODUCTION	7	3
CHAPTER 4 – AIRWORTHINESS LIMITATIONS	8	3
CHAPTER 5 – INSPECTION REQUIREMENTS	9	3
CHAPTER 5 – INSPECTION REQUIREMENTS	10	3
CHAPTER 5 – INSPECTION REQUIREMENTS	11	3
CHAPTER 5 – INSPECTION REQUIREMENTS	12	3
CHAPTER 32 – LANDING GEAR	13	3
CHAPTER 32 – LANDING GEAR	14	3
CHAPTER 32 – LANDING GEAR	15	3
CHAPTER 32 – LANDING GEAR	16	3
CHAPTER 32 – LANDING GEAR	17	3
CHAPTER 32 – LANDING GEAR	18	3
CHAPTER 32 – LANDING GEAR	19	3
CHAPTER 32 – LANDING GEAR	20	3
CHAPTER 32 – LANDING GEAR	21	3
CHAPTER 32 – LANDING GEAR	22	3
CHAPTER 32 – LANDING GEAR	23	3
CHAPTER 32 – LANDING GEAR	24	3
CHAPTER 32 – LANDING GEAR	25	3
CHAPTER 32 – LANDING GEAR	26	3
CHAPTER 32 – LANDING GEAR	27	3
CHAPTER 32 – LANDING GEAR	28	3
CHAPTER 32 – LANDING GEAR	29	3
CHAPTER 32 – LANDING GEAR	30	3
CHAPTER 32 – LANDING GEAR	31	3
CHAPTER 32 – LANDING GEAR	32	3
CHAPTER 32 – LANDING GEAR	33	3
CHAPTER 32 – LANDING GEAR	34	3
CHAPTER 32 – LANDING GEAR	35	3
CHAPTER 32 – LANDING GEAR	36	3
CHAPTER 32 – LANDING GEAR	37	3

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

TABLE OF CONTENTS

CHAPTER 0 – INTRODUCTION (00-00-00)	5
0.1 SCOPE	5
0.2 ARRANGEMENT	5
0.3 DISTRIBUTION	5
0.4 COMPATIBILITY	5
0.5 SYSTEM DESCRIPTION	6
CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00)	8
CHAPTER 5 – INSPECTION REQUIREMENTS (05-00-00)	9
5.1 DAILY INSPECTION	9
5.2 600 HOUR / 2 YEAR INSPECTION	9
5.3 OVERHAUL REQUIREMENTS	12
CHAPTER 32 – LANDING GEAR (32-00-00)	13
32.1 SKIDTUBE REMOVAL	13
32.2 SKIDTUBE RE-INSTALLATION	13
32.3 WEARPLATE/WEARSHOE/WEARPAD/GASKETS REPLACEMENT	13
32.4 BLADE FITTING REPLACEMENT	15
32.5 REMOVAL/RE-INSTALLATION OF THE D350-636-101 TOE STEP KIT	15
32.6 REMOVAL/RE-INSTALLATION OF THE D350-636-105A/-105B WEDGE KIT	15
32.7 REMOVAL/RE-INSTALLATION OF THE D350-636-107A/-107B CABLE GUARD KIT	16
32.8 TOW RING REPLACEMENT	16
32.9 WEIGHT AND BALANCE	28
32.10 PART LIST	30

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

CHAPTER 0 – INTRODUCTION (00-00-00)

0.1 SCOPE

This manual provides the requirements set forth in Appendix A of FAR Part 27 for the Instructions for Continued Airworthiness of the Dart D350-636 **Skidtube Installation** on the Eurocopter AS 350/355 model aircraft. These Instructions for Continued Airworthiness have been determined to be acceptable to the Federal Aviation Administration (FAA) and are to be referred to for inspection and maintenance when the Dart Skidtubes are installed on, removed from, or in service on the rotorcraft.

0.2 ARRANGEMENT

This manual is arranged in ATA-100 format. This manual is only applicable to the AS 350/355 model rotorcraft modified with the Dart D350-636 **Skidtube Installation**.

There are no abbreviations, acronyms, or symbolization, which are not common to the aviation industry in this manual.

Units of measurement are expressed in Imperial and metric values and all torque values are standard values for the specified fastener combinations as defined in FAA AC 43.13, unless specified otherwise in this document.

No other Instructions for Continued Airworthiness for any product or appliance is inferred or addressed herein.

0.3 DISTRIBUTION

Any changes in the content or revision level of this document have been made available to operators at www.dartaero.com

Additionally, any changes will be sent to FAA. All changes will be recorded in the Record of Revisions page at the front of this manual.

0.4 COMPATIBILITY

Compatibility of this installation with the aircraft is the **responsibility of the installer**. Ensure that this installation does not conflict with a previous modification.

0.5 SYSTEM DESCRIPTION

These instructions cover the installation of Dart D350-636 Skidtubes on the AS 350/355 model aircraft.

The Dart D350-636 skidtubes are compatible with OEM crosstubes and can be installed in pairs or in combination with an OEM skidtube. The Dart Skidtube Installations are replacements for the following (or previously replaced) skidtubes:

DART SKIDTUBE	AS SKIDTUBE	COMPATIBLE FLOAT SYSTEM
D350-636-011/ -015/-215	350A41-1016-0151 350A41-1016-1061 350A41-1016-1063 350A41-1016-1070 350A41-1016-1255 350A41-1016-1261 350A41-1016-1262 350A41-1016-1263 350A41-1016-4806	AERAZUR APICAL CYLINDRICAL FLOATS
D350-636-012/ -016/-216	350A41-1016-0251 350A41-1016-1155 350A41-1016-1161 350A41-1016-1163 350A41-1016-1171 350A41-1016-1361 350A41-1016-1362 350A41-1016-1363 350A41-1016-4906	AERAZUR APICAL CYLINDRICAL FLOATS
D350-636-013/ -017/-217	350A41-1080-03	AIRCROUSER APICAL TRI-BAG FLOATS
D350-636-014/ -018/-218	350A41-1080-02	AIRCROUSER APICAL TRI-BAG FLOATS

The Dart Skidtube Installations are to be installed with the crosstubes listed in the following table. It is also acceptable to install the Dart skidtubes on approved crosstube part numbers that have been replaced by the part numbers in this table.

DART SKIDTUBE	FORWARD CROSSTUBES	AFT CROSSTUBES
D350-636-011	D350-748-101	D350-748-201
D350-636-012	350A41-1086-01	350A41-1087-00
D350-636-013	350A41-1000-21	350A41-1029-02
D350-636-014	350A41-2000-21	350A41-2001-02
D350-636-015	355A41-2000-02	355A41-2001-03
D350-636-016	350A41-1086-02	350A41-1087-02
D350-636-017		
D350-636-018		
D350-636-215		
D350-636-216		
D350-636-217		
D350-636-218		

The D350-636-011/-012 kits are the standard configuration of the installation and are compatible with Aerazur floats and Apical Cylindrical floats consisting of P/N 20327-100 fwd float; 20328-100 mid float; 20329-100 aft float that are FAA STC'd per SR00470LA (AS 350 models) and SR00645LA (AS 355 models).

The D350-636-013/-014 kits are compatible with Aircruiser floats and Apical Tri-bag floats consisting of P/N 20427-101 fwd float; 20428-101 mid float; 20429-101 aft float that are FAA STC'd per SR00831LA (AS 350/355 models).

The D350-636-047 Run-on Landing Wearplate Kit is a heavy-duty run-on wearplate that features large tungsten carbide weld beads and is installed using a through-bolt design to eliminate the chance of the skidtube wearshoe inserts being damaged. The D350-636-047 Run-on Landing Wearplate Kit is compatible with -011/-012/-013/-014/-015/-016/-017/-018/-215/-216/-217/-218 Skidtubes with/without floats installed.

The D350-636-015/-016 Skidtube Installations are similar to Dart's D350-636-011/-012 Skidtubes, and the D350-636-017/-018 Skidtube Installations are similar to Dart's D350-636-013/-014 Skidtubes, except that the wearshoe inserts have been removed and the tubes are fitted with the D350-636-047 Run-on Landing Wearplate Kit.

The D350-636-101 Toe Step can be installed on D350-636-011/-012/-013/-014/-015/-016/-017/-018 Skidtubes to provide easy access to the cockpit for the pilots.

The D350-636-105A/B Wedge Kits can be installed on D350-636-011/-012/-013/-014/-015/-016/-017/-018 Skidtubes to help prevent the D2741 blade from getting snagged on objects on the ground during take-off. The D350-636-105A Wedge Kit is compatible with Apical Float Systems per STC SR00470LA, SR00645LA and SR00831LA with the low angle float extensions but is not compatible with OEM skidtubes. The D350-636-105B Wedge Kit is compatible with non-float tube equipped skidtubes but is not compatible with OEM skidtubes.

The D350-636-107 Cable Guard kit may be installed on D350-636-011/-013/-015/-017/-215/-217 Skidtube installations during hoisting operations to prevent damage to the cable and skidtube. The D350-636-107 Cable Guard Kit consists of the D350-636-107A Forward Cable Guard and the D350-636-107B Aft Cable Guard Kits. The D350-636-107A/-107B kits may be installed separately or in combination.

The D350-636-215/-216 Skidtubes are similar to Dart's D350-636-015/-016 Skidtubes and the D350-636-217/-218 Skidtubes are similar to Dart's D350-636-017/-018 Skidtubes, except that the D350-636-101 Toe-Step Kit, D350-636-105A Wedge Kit, and D350-636-109 Tow Ring Kit are pre-installed for the convenience of the customer.

CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00)

The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under Sections 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

No airworthiness limitations associated with this type design change.

CHAPTER 5 – INSPECTION REQUIREMENTS (05-00-00)**5.1 DAILY CHECK**

- 5.1.1 The installation should be visually checked for corrosion or excessive wear/damage. If corrosion, wear, or damage in excess of the limits outlined in Section 5.2 has occurred, perform the detailed 600 hour inspection outlined below.

5.2 600 HOUR / 2 YEAR INSPECTION

(To be performed every 600 hours or 2 years to coincide with aircraft landing gear inspection or after any hard landing)

Note: For the convenience of scheduling maintenance, the tolerance for scheduled inspection intervals is +/-10% (+/- 60 hours). In each case, the subsequent interval will be adjusted to re-establish the original schedule. When an inspection is done more than 10% early, subsequent inspections will be advanced as required not to exceed the maximum tolerance. Concurrence and final approval of inspection interval tolerance by the governing civil aviation authority is the responsibility of the owner/operator.

- 5.2.1 All areas of the installation should be inspected visually for mechanical damage (nicks and scratches) and corrosion. It is acceptable to have nicks, scratches, or corrosion damage up to 0.010" (0.4 mm) deep anywhere on the skidtube. Blend out scratches/nicks/corrosion in the skidtube using 400 grit abrasive cloth to a maximum depth of 0.010" (0.4 mm). There should be a smooth transition from the surrounding tube to the affected area. After clean up, touch up affected area with chemical film material (Alodine 1200 or 1201) per MIL-C-5541, one coat of MIL-P-85582 or MIL-P-23377 primer, and 2-3 coats of MIL-C-83285 polyurethane paint to match original finish.

- 5.2.2 The wearshoes should be checked for excessive wear/damage. Wearshoes need to be replaced when 2 sequential tabs are cracked or when the wearshoe has wear, scratches, nicks, or corrosion damage of any size deeper than 0.030" (0.8 mm). Wearshoes with hard surfacing should be replaced when the hard surfacing has worn through.

The wearplate attachment holes may be elongated up to 0.125" (3 mm) in diameter. If any of the attachment holes are elongated beyond 0.125" (3 mm) in diameter, the wearplates must be replaced.

For skidtubes with carbon steel wearplates, the weld beads may be built back up to 0.06" (1.5mm) to 0.13" (3.4mm) using UTP 7560 Hard Coat welding rod. Cracks in the base material of the wearplate that are up to 0.125" (3 mm) in length do not need to be repaired. Cracks in the base material that exceed 0.125" (3 mm) in length to be welded closed per AMS STD 2219 using ER70S-6 filler rod.

For skidtubes with stainless steel wearplates, the weld beads may be built back up to 0.06" (1.5mm) to 0.13" (3.4mm) using 2059B Hard Coat welding rod. Cracks in the base material of the wearplates that are up to 0.125" (3 mm) in length do not need to be repaired. Cracks in the base material that exceed 0.125" (3 mm) in length need to be welded closed per AMS STD 2219 using ER316L or ER308L filler rod.

For skidtubes equipped with training wearplates, the weld beads on the wearbars may be built back up to 0.20" (5 mm) to 0.30" (8 mm) thick per AMS STD 2219 using 2059B hard coat welding rod. If the wearbars have been worn down to less than 0.06" (1.5 mm) thick, the wearplate must be replaced. Cracks in the wearbars that are perpendicular to the axis of the skidtube (as shown in Figure 5-1) are permissible and do not hinder the performance of the

wearplate. If these cracks are less than 0.50" (13 mm) apart, the cracks must be filled per AMS STD 2219 using ER316L or ER308L filler rod.

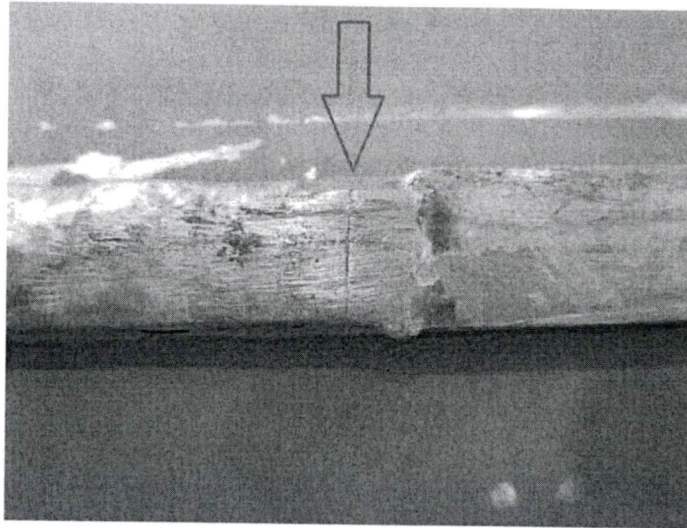


Figure 5-1 – Cracks in Wearbars

- 5.2.3 Inspect the skidtube assembly for serious damage in any of the areas indicated by "X" in Figure 5-1. Serious damage is defined as follows:
- cracks that exceed 0.25" (6.4 mm) in length.
 - localized denting deeper than 0.015" (0.4 mm).
 - skidtube dimensions beyond the limits shown in Figure 5-2 (adjust limits for corrosion/wear as described in item 5.2.1 above).

This type of damage is unacceptable anywhere along the straight section of the tube. Replace parts per item 5.2.13.

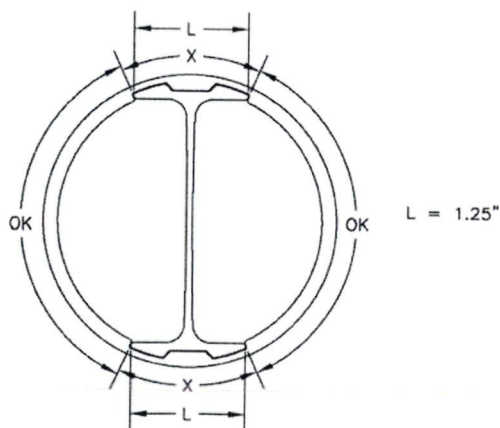


Figure 5-2 – Damage Regions

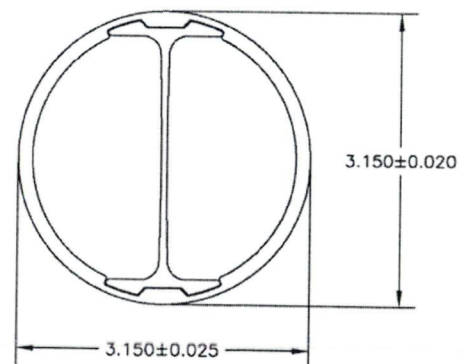


Figure 5-3 – Acceptable Limits

- 5.2.4 Inspect the sides of the skidtube for excessive wear/damage. Dents up to 2.00" (51 mm) long x 1.00" (25 mm) wide x 0.12" (3.0 mm) deep are acceptable in the areas indicated 'OK' in Figure 5-1. Damaged areas should be a minimum of 3.00" (76 mm) apart.
- 5.2.5 Cracks on the sides (areas indicated by 'OK' in Figure 5-1) of the skidtubes that do not exceed 1.00" (25 mm) in length can be repaired by T.I.G. welding as follows:
- a) clean area of paint, etc.
 - b) grind a chamfer 0.050" (1.3 mm) x 45° along crack.
 - c) T.I.G. weld per MIL-STD-2219 Class 'C' using 5356 filler rod and grind flush.
 - d) Touch up affected areas with chemical film material (Alodine 1200 or 1201) per MIL-C-5541, one coat of MIL-P-85582 or MIL-P-23377 primer, and 2-3 coats of MIL-C-83285 polyurethane coat to match original finish.
- It is unacceptable to perform weld repairs on the skidtubes in the saddle areas. Weld repairs must be a minimum of 1" (25 mm) apart.
- 5.2.6 Inspect the area between the saddles for bow or sharp bends. A smooth bow in the skidtube from saddle to saddle is acceptable as long as permanent deflection does not exceed 0.50" (13 mm). Maximum deflection should be at or near the midpoint between the saddles.
- 5.2.7 Check the saddles for looseness. If movement is detected, remove parts and check for hole elongation. If holes are elongated beyond 0.025" (0.6 mm), contact Dart for disposition.
- 5.2.8 Inspect the D2742-1/-2 or D3488-041/-042 Blade Fitting for security. If movement is detected, remove and check for damage. If holes are elongated beyond 0.025" (0.6mm), part is cracked, or there is scratches/nicks/corrosion damage deeper than 0.010" (0.25mm), replace per 5.2.13.
- 5.2.9 Inspect the D2741 blade for wear/damage. If the D2741 blade is cracked, permanently deformed, or worn below 0.188" (4.8mm) minimum thickness, replace per 5.2.13.
- 5.2.10 If floats are installed, check the security of the float bags to the skidtube. If movement is detected, the float bags should be removed and the float attachment holes should be inspected for hole elongation. If the float attachment holes have been elongated beyond 0.025" (0.6 mm), contact Dart for disposition.
- 5.2.11 If the D350-636-101 toe step kit and/or D350-636-105A/-105B wedge kit and/or D350-636-107A/-107B cable guard kits and/or D350-636-109 tow ring kit are installed, check for security of attachment to the skidtube. If movement is detected, remove parts and check for hole elongation. Check steps/tow ring/wedges/cable guards for cracks and replace per item 5.2.13 if cracked.
- 5.2.12 Inspect all areas of the skidtube for suitability of the paint finish. Touch up affected areas with chemical film material (Alodine 1200 or 1201) per MIL-C-5541 (aluminum only), one coat of MIL-P-85582 or MIL-P-23377 primer, and 2-3 coats of MIL-C-83285 polyurethane paint to match original finish. Clean off flaking anti-skid and touch up with Black Anti-Skid paint per MIL-W-5044 Type 2.
- 5.2.13 Any part which does not meet the limitations described above is considered to be excessively damaged or unserviceable. Replace all excessively damaged or unserviceable parts per Chapter 32 of these instructions.

5.3 OVERHAUL REQUIREMENTS

NO COMPONENT OVERHAUL REQUIRED FOR THIS DESIGN CHANGE

CHAPTER 32 – LANDING GEAR (32-00-00)

NOTE: In corrosive environments, exposed hardware should be coated with LPS Procyon after installation. Excess should be cleaned with a degreaser (MEK).

32.1 SKIDTUBE REMOVAL

- 32.1.1 Hoist or jack the helicopter for removal of skidtubes using the procedures prescribed in the Aircraft Maintenance Manual. If required, disconnect/remove and retain any clamps/fittings/ hoses associated with the float system that will interfere with the removal of the skidtubes.
- 32.1.2 Remove skidtube(s) by removing the skidtube to crosstube saddle attachment fasteners (8 places, items 2, 3, and 4 of section A-A/P-P) and retain for reinstallation.

32.2 SKIDTUBE RE-INSTALLATION

- 32.2.1 Position the D350-636-XXX skidtube(s) so that the fwd/aft saddle holes in the skidtubes align with the saddle holes in the crosstubes. Install saddle hardware (items 2, 3, and 4 of section A-A/P-P) and torque the bolts per Aircraft Maintenance Manual.
Note: If installing the Dart skidtube(s) with the Dart D350-748-101/-201 Crosstube Kits per Canadian STC SH06-27/FAA STC SR02359NY, items 2, 3 and 4 will be replaced with the hardware provided in the crosstube kit (refer to Canadian STC SH06-27/FAA STC SR02359NY).
Note: For complete instructions on the installation of Dart D350-636 skidtubes on D350-748 Dart crosstubes, refer to chapter 32 of ICA-D350-748.
- 32.2.2 Re-attach/re-connect any clamps/fittings/hoses that were removed/disconnected to remove the skidtube per section 32.1.2.
- 32.2.3 Lower the aircraft.

32.3 WEARPLATE/WEARSHOE/WEARPAD/GASKETS REPLACEMENT

- 32.3.1 Remove wearplate/wearshoes/wearpads/gaskets by removing AN3 bolts or MS27039 screws. Begin wearplate/wearshoes/wearpads removal from the fwd end of the skidtube towards the aft end. On some skidtube installations this will require breaking a layer of sealant between the wearshoes and the skidtube.
- 32.3.2 If present, clean residual sealant off the bottom of the skidtube. Check for corrosion and mechanical damage in accordance with Chapter 5 and repair as required.
- 32.3.3 **For D350-636-011/-012/-013/-014 Skidtubes at CHG 002 or earlier**

If installing replacement D2656-13/-35 Wearshoes, D2746 Wearshoes or D2648-3 Wearpads, at the customer's discretion, a new layer of Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant may be applied to the bottom surface of the skidtubes. Install the wearshoes/wearpads beginning from the aft end of the skidtube towards the forward end of the skidtube. All bolts should be sealed with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant before installing. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

Note: If the D2656-13/-35 Wearshoes, D2746 Wearshoes or D2648-3 Wearpads are being replaced, it is recommended that all wearshoes/wearpads be removed and replaced with the

D350-636-045 Wearshoe Kit. The D350-636-045 kit can be procured from Dart and installed as outlined in DSI 9413. Adjust weight and balance per Section 32.6.

32.3.4 For D350-636-011/-012/-013/-014 Skidtubes at CHG 003

Install the D3535-13/-25/-35 Wearshoes (items 23A, 24A and 25A) and D3537-1 Wearpads (item 22) complete with D3536-13/-25/-35 Gaskets (items 23B, 24B and 25B) using AN3C bolts and associated hardware as shown in **Section A-A**. If required, install replacement D3536-13/-25/-35 Gaskets or install previously removed gaskets from step 32.3.1. Install the wearshoes/wearpads/gaskets beginning from the aft end of the skidtube towards the forward end of the skidtube. All bolts should be sealed with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant before installing. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

Note: The D3536-13/-25/-35 Gaskets must be installed with only the D3535-13/-25/-35 Wearshoes and D3537-1 Wearpads.

Note: To improve the installation of D350-636-011/-012/-013/-014 Skidtubes equipped with stainless steel wearplates/wearpads and gaskets (CHG 003) onto the crosstubes, DSI 9413-011 kit can be procured from Dart to provide the necessary parts and hardware. The DSI 9413-011 kit can be installed as outlined in DSI 9413.

32.3.5 For D350-636-011/-012/-013/-014 Skidtubes at CHG 004 and subsequent

Install the D3793-1, D3535-25 and D3793-3 Wearshoes (items 23A, 24A and 25A) and D3537-1 Wearpads and D3791-1 Wearplate (item 22 and 22A) complete with D3794-1, D3536-25 and D3794-3 Gaskets (items 23B, 24B and 25B) using AN3C bolts and associated hardware as shown in **Section P-P** and **Section Q-Q**. If required, install replacement D3794-1/-3 and D3536-25 Gaskets or install previously removed gaskets from step 32.3.1. Install the wearshoes/wearpads/gaskets beginning from the aft end of the skidtube towards the forward end of the skidtube. All bolts should be sealed with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant before installing. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

Note: The D3536-25 and D3794-1/-3 Gaskets must be installed with only the D3535-25 and D3793-1/-3 Wearshoes, D3537-1 Wearpads and D3791-1 Wearplate.

32.3.6 For D350-636-015/-016/-017/-018/-215/-216/-217/-218 Skidtubes and D350-636-011/-012/-013/-014 Skidtubes upgraded with D350-636-047 Run-on Landing Wearplate Kit

Install the D4154-041 Wearplate Assembly (item 90) using AN3-XXA bolts (items 91A, 91B and 91C) and associated hardware as shown in **Section S-S**, **Section T-T**, and **Section U-U** of Figure 3. Install the Wearplate Assembly beginning from the aft end of the skidtube towards the forward end of the skidtube. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

32.4 BLADE FITTING REPLACEMENT

Note: The D3488-041/-042 Blade Fitting will replace any previous D2742-1/-2 Blade Fitting installation. The weight and balance of the D350-636-011/-012/-013/-014 Skidtube Kits with the D3488-041/-042 Blade Fitting installed is described in Section 32.9 of this document.

- 32.4.1 Remove the existing D2742-1/-2 or D3488-041/-042 Blade Fitting by removing any wearshoe bolts used to install the blade fitting (CHG 003 or earlier) and the AN8-35A/AN8C35A bolt (item 5) and associated hardware.
- 32.4.2 Remove and retain the D2741 Blade (item 9) from the blade fitting.
- 32.4.3 Apply Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant to the replacement D3488-041/-042 Blade Fitting and insert the blade fitting into the aft end of the skidtube assembly. Ensure all holes are properly aligned.
- 32.4.4 For D350-636-011/-012/-013/-014 Skidtubes at CHG 003 or earlier, re-install the wearshoes using AN3C7A bolts and AN960C10L washers (items 26B and 27) (refer to **Section A-A**). Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).
Note: If installing the D350-636-103/-104 conversion kits, the AN3C7A bolts and AN960C10L washers are provided with the conversion kits.
- 32.4.5 Re-install the AN8-35A/ AN8C35A bolt (item 5) and associated hardware. Torque the fasteners to 480-690 in-lbs (54.2-78.0 N-m). Apply a bead of Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant at the joint as applicable.
- 32.4.6 Re-install the D2741 Blade as shown in **Detail D** for non-float installations or **Detail G** for float compatible installations.
Note: For float compatible installations, the D3493-1 Washer (item 43) must be installed between the Apical P/N 20473-6 bolt head and the D2741 Blade (item 9) as shown in **Detail G**
Note: It is recommended that an Antiseize thread compound (lubricant) be applied to the AN8C21A bolts or Apical P/N 20473-6 bolts prior to installation. Lubricant must meet or exceed MIL-A-907.

32.5 REMOVAL/RE-INSTALLATION OF THE D350-636-101 TOE STEP KIT

- 32.5.1 Remove the D3487-1 toe step assembly by removing 4x AN3 bolts securing the step to the fwd end of the skidtube.
- 32.5.2 To re-install, slide the D3487-1 step assembly over front end of skidtube and install with hardware (items 19, 20A and 20B) as shown in **Detail H**. Torque the fasteners to 15-25 in-lbs (1.7-2.8 N-m).

32.6 REMOVAL/RE-INSTALLATION OF THE D350-636-105A/-105B WEDGE KIT

- 32.6.1 To remove the D350-636-105A/-105B wedge kit, remove the D2741 blade from the D350-636 skidtube assemblies.
- 32.6.2 Remove the D3926-1/-3 wedge by removing 2x MS24693S276 screws securing the wedge to the blade (See Figure 32-4 for details).

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

- 32.6.3 Re-install the D2741 blade onto the D350-636 skidtube assembly as shown in **Detail D** or **Detail G** as applicable.
- 32.6.4 To re-install the D350-636-105A/-105B wedge kit, remove the D2741 blade from the D350-636 skidtube assemblies.
- 32.6.5 Install the D3926-1/-3 wedge on each D2741 blade using 2x MS24693S276 screws (See Figure 32-4 for details).
- 32.6.6 Re-install the D2741 blade onto the D350-636 skidtube assembly as shown in **Detail D** or **Detail G** as applicable.

32.7 REMOVAL/RE-INSTALLATION OF THE D350-636-107A/-107B CABLE GUARD KIT

- 32.7.1 To remove the D350-636-107A Fwd Cable Guard Kit, remove the 2x AN4-14A bolts between the D3927-1 fwd cable guard and the two D3928-1 brackets (See Figure 32-5 for details).
- 32.7.2 Remove the 2x D3928-1 brackets by removing the 2x 350A41-1027-20 forward and 2x 350A41-1027-20 aft bolts (with OEM crosstubes installed) or AN4-41A bolts and D3501-1 bushings (with Dart crosstubes installed).
- 32.7.3 Re-install the saddle bolts (and bushings as applicable) per Aircraft Maintenance Manual or relevant STC.
- 32.7.4 To re-install the D350-636-107A Fwd Cable Guard Kit, remove the 2x 350A41-1027-20 forward and 2x 350A41-1027-20 aft bolts (with OEM crosstubes installed) or AN4-41A bolts and D3501-1 bushings (with Dart crosstubes installed) holding the forward LH saddle in place (See Figure 32-5 for details).
- 32.7.5 Insert the bolts (and bushings as applicable) through the holes provided in the D3928-1 bracket and reinstall per Aircraft Maintenance Manual or relevant STC.
- 32.7.6 Position the D3927-1 forward cable guard between the tangs of the D3928-1 brackets and install the D3927-1 forward cable guard using the 2x AN4-14A bolts.
- 32.7.7 To remove D350-636-107B Aft cable guard kit, pull out the BLBS-020 pip pin at the aft end of the D3927-3 cable guard and slide forward over the outboard ground handling lugs on the LH skidtube (See Figure 32-5 for details).
- 32.7.8 To re-install the D350-636-107B Aft cable guard kit, slide the D3927-3 aft cable guard over the outboard ground handling lugs on the LH skidtube (See Figure 32-5 for details). Insert the BLBS-020 pip pin into the hole at the aft end of the D3927-3 cable guard to secure it in place.

32.8 TOW RING REPLACEMENT

- 32.8.1 Remove the D3407-043 Tow Ring Assembly by removing the nut (item 83) and associated hardware as shown in **Section R-R**.
- 32.8.2 Check skidtube for corrosion damage and repair in accordance with Chapter 5.
- 32.8.3 Re-install replacement D3407-043 Tow Ring using MS21043-4 nut (item 83) and associated hardware (items 81, 82) as shown in **Section R-R**. Torque nuts to 50-70 in-lbs (5.7-7.9 N-m).

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

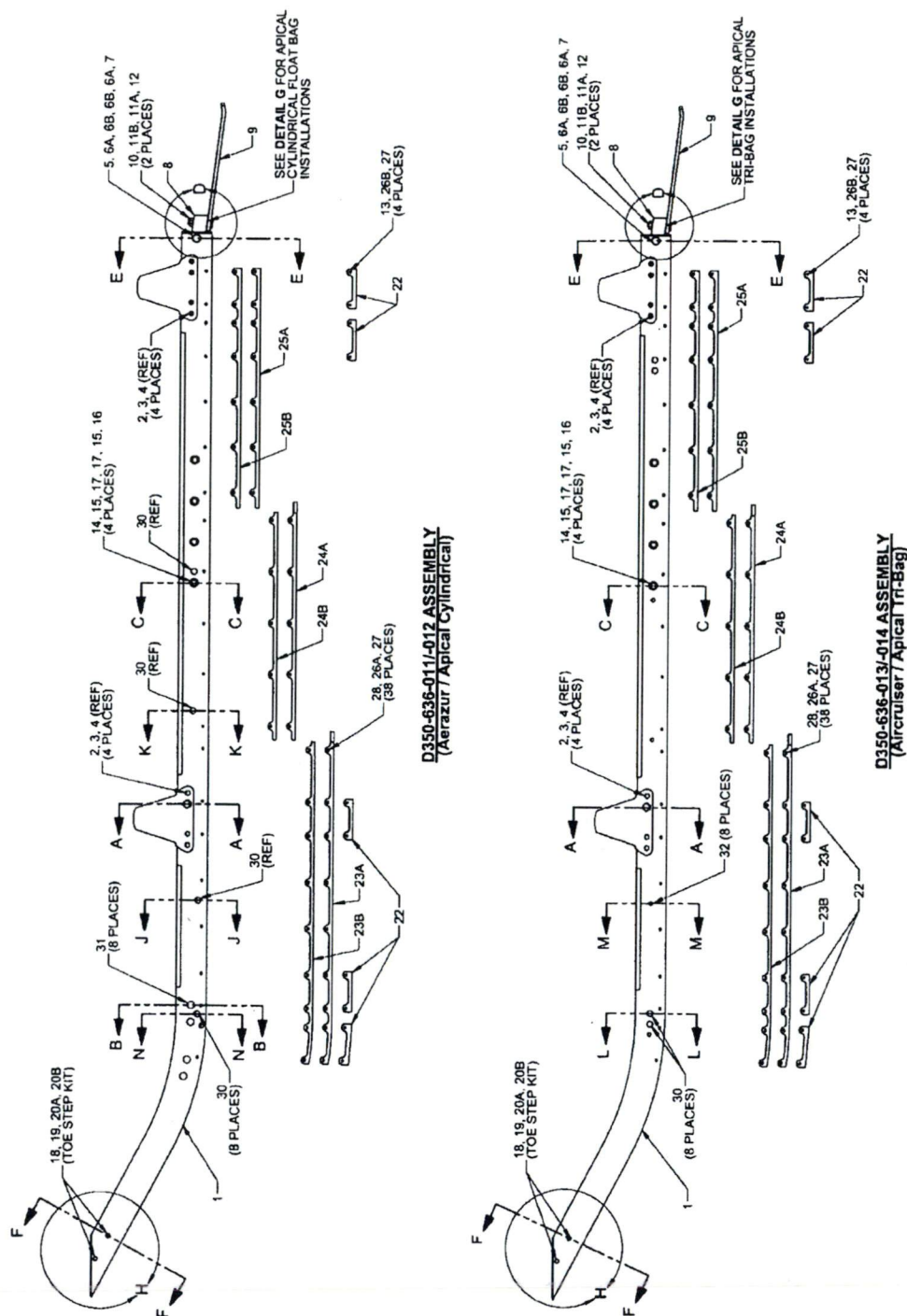
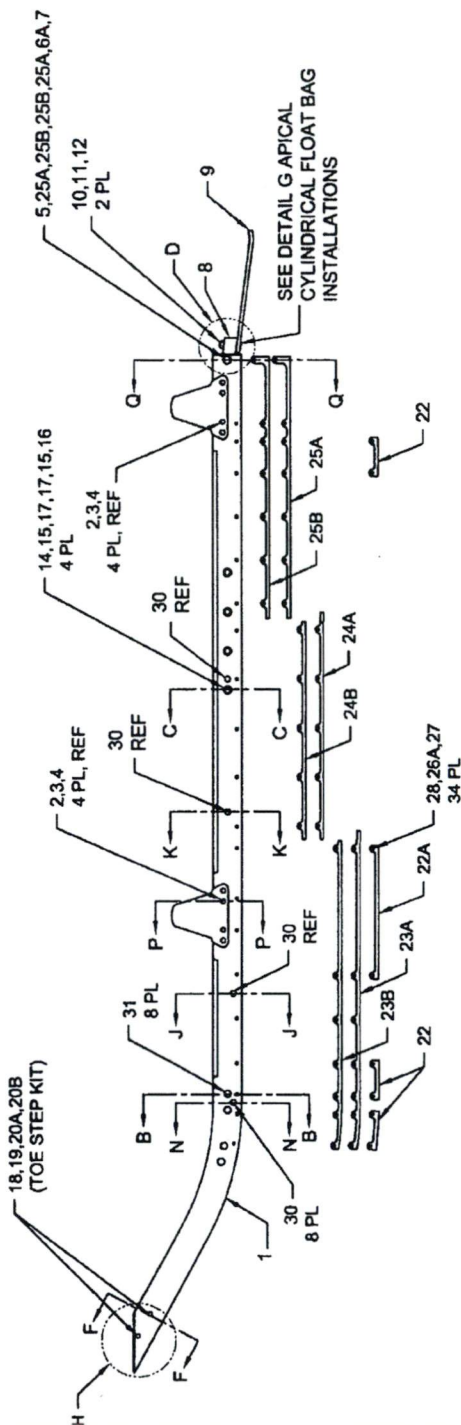


Figure 32-1: D350-636-011/-012/-013/-014 SKIDTUBES AT CHANGE 003

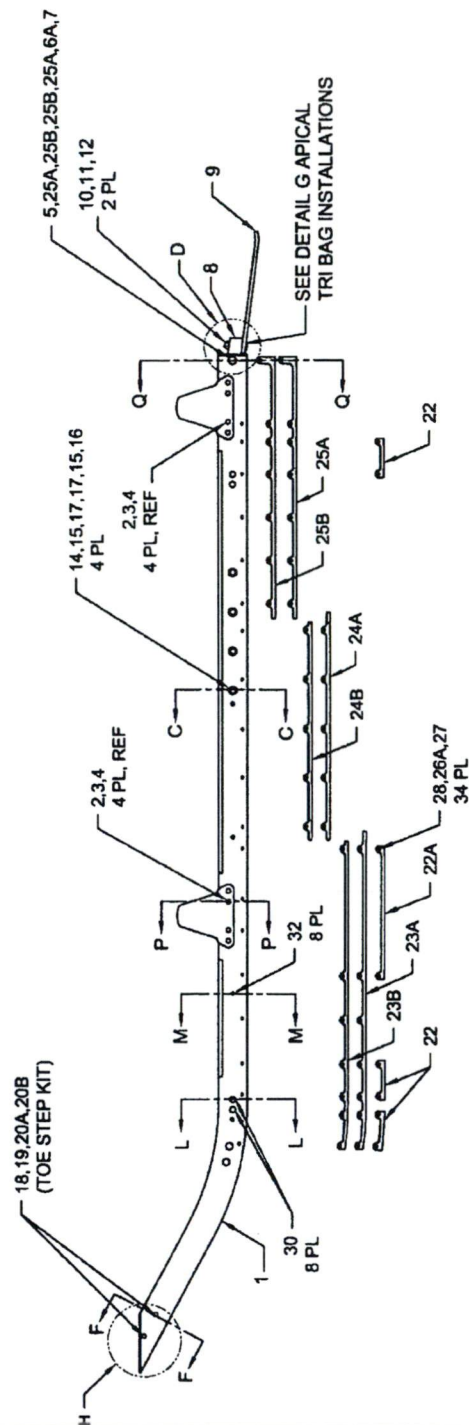
• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00



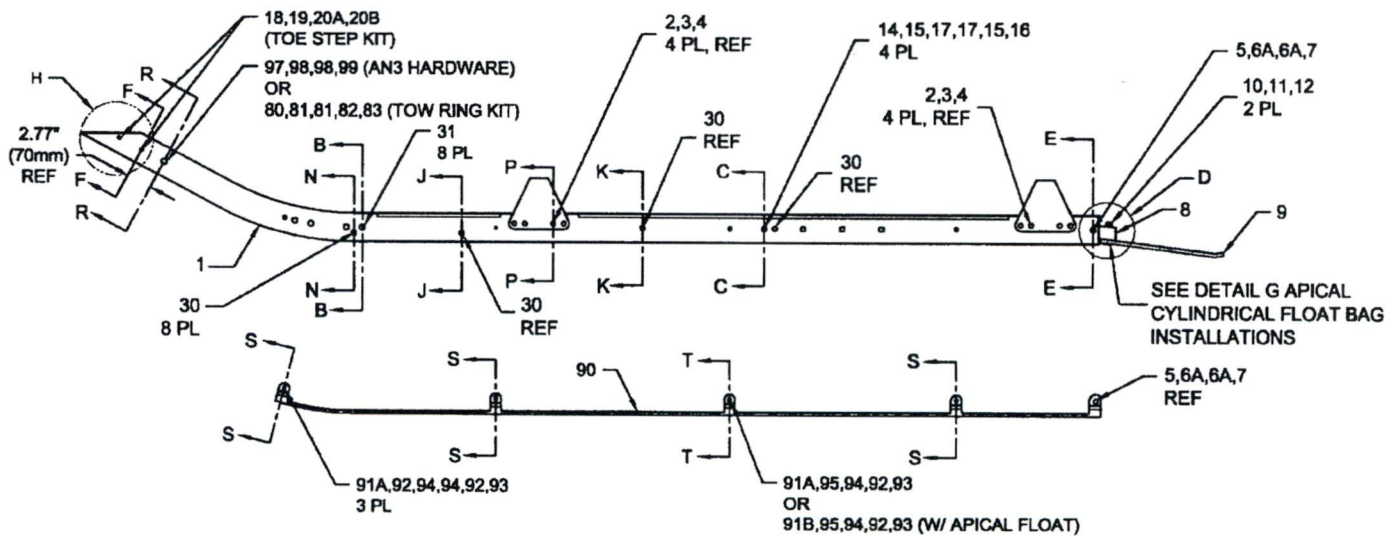
D350-636-011/-012 ASSEMBLY
(Aerazur / Apical Cylindrical)



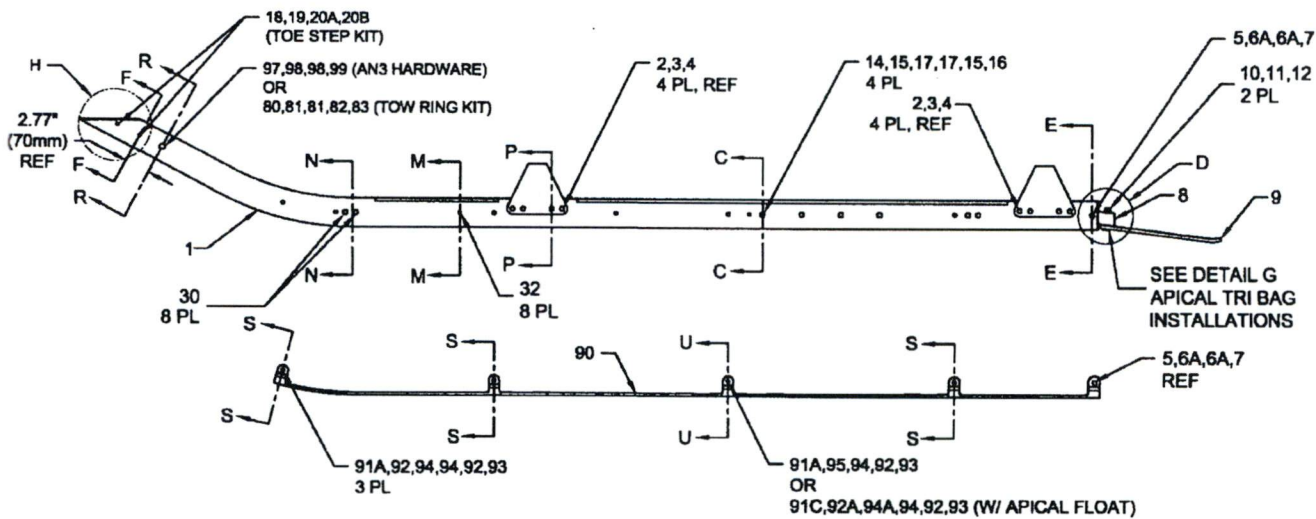
D350-636-013/-014 ASSEMBLY
(Aircruiser / Apical Tri-bag)

Figure 32-2: D350-636-011/-012/-013/-014 SKIDTUBE ASSEMBLY
AT CHG 004 AND SUBSEQUENT

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.



D350-636-015/-016/-215/-216
(Aerazul/Apical Cylindrical)



D350-636-017/-018/-217/-218
(Aircruiser/Apical Tri-bag)

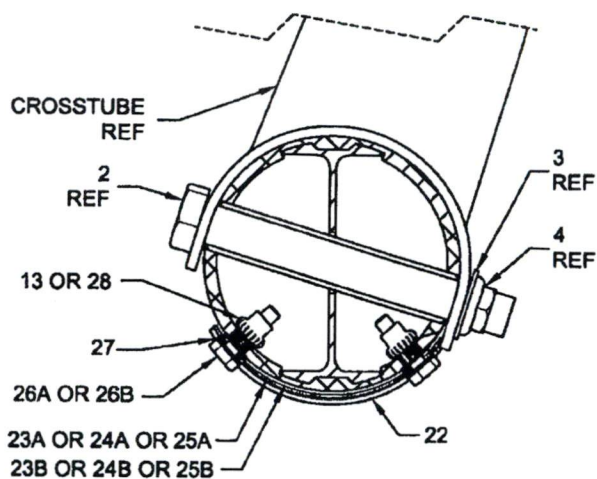
Figure 32-3: D350-636-015/-016/-017/-018/-215/-216/-217/-218
SKIDTUBE ASSEMBLY

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

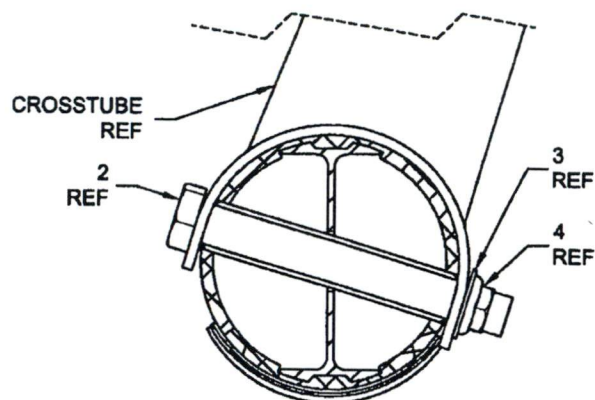
• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

Revision: 3

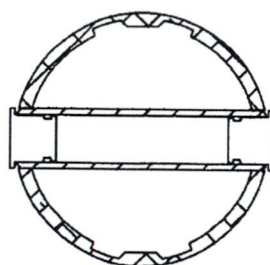
32-00-00



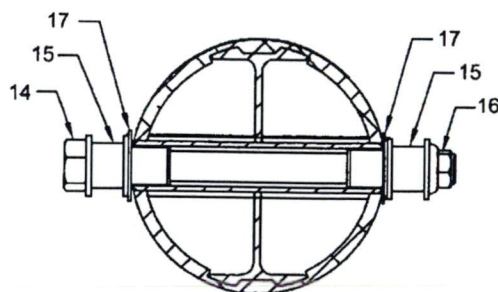
SECTION A-A
(D350-636-011/-012/-013/-014 SKIDTUBES
AT CHG 003 ONLY)



SECTION P-P
(D350-636-011/-012/-013/-014 SKIDTUBES
AT CHG 004 OR SUBSEQUENT)

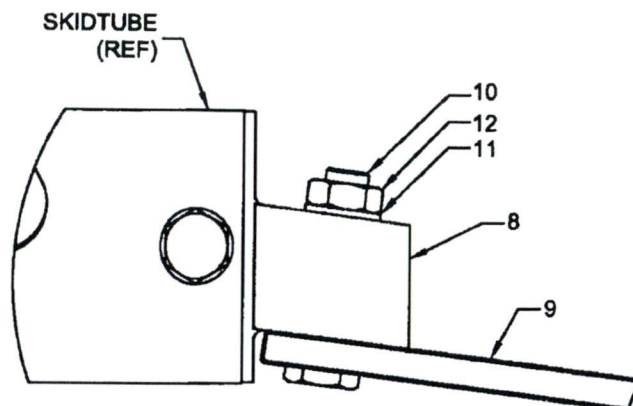


SECTION B-B
(SECTION J-J, K-K, L-L AND M-M SIMILAR)
8 PL PER SKIDTUBE

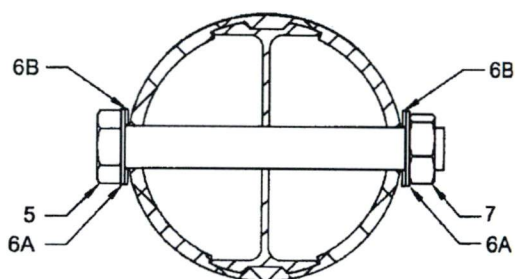


SECTION C-C
4 PL PER SKIDTUBE

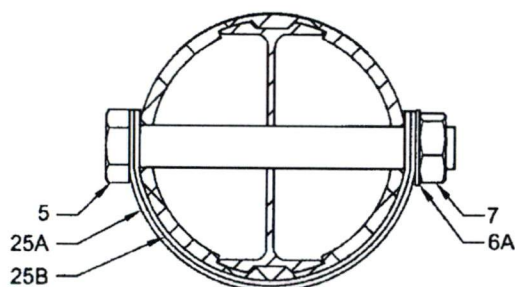
• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.



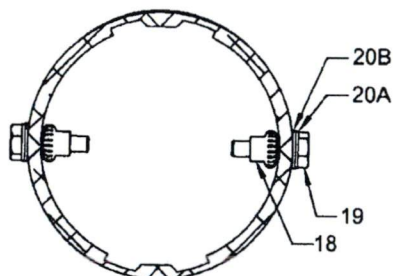
DETAIL D
1 PL PER SKIDTUBE



SECTION E-E
(D350-636-011/-012/-013/-014 SKIDTUBES
AT CHG 003 ONLY)

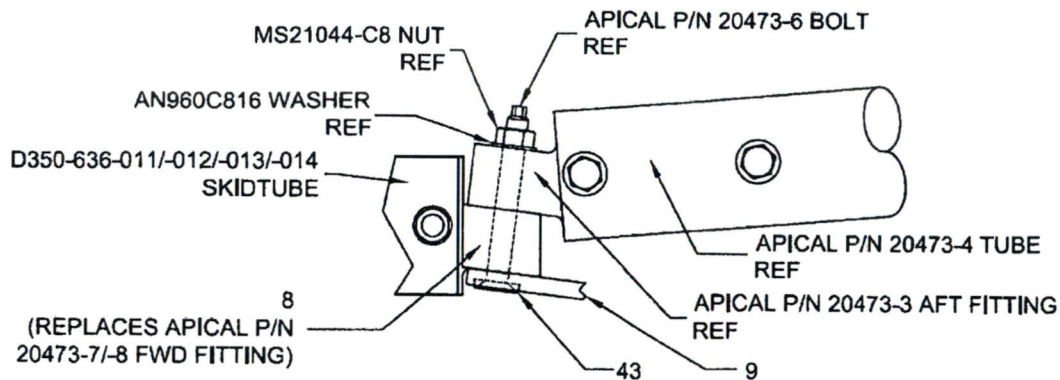


SECTION Q-Q
(D350-636-011/-012/-013/-014 SKIDTUBES
AT CHG 004 OR SUBSEQUENT)

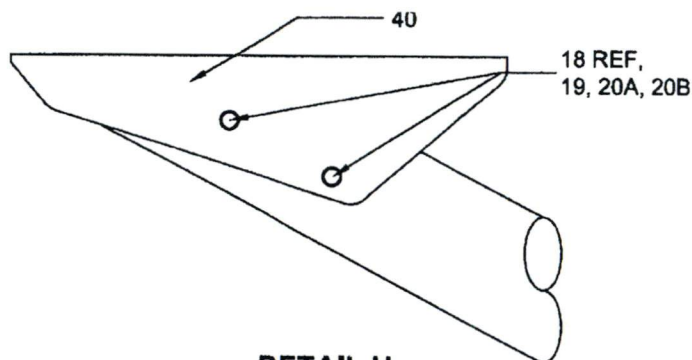


SECTION F-F
2 PL PER SKIDTUBE

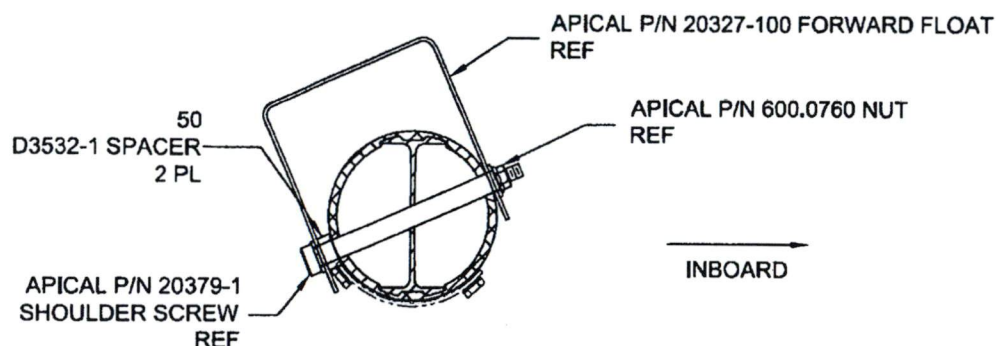
• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.



DETAIL G
(APICAL CYLINDRICAL AND TRI-BAG INSTALLATIONS)
1 PL PER SKIDTUBE

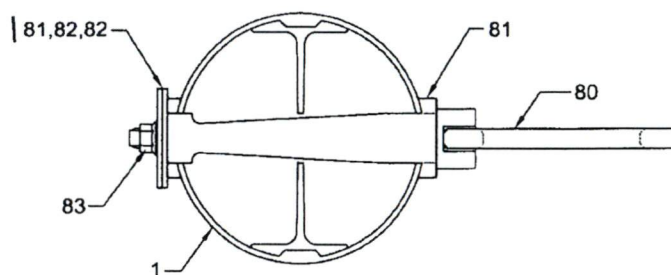


DETAIL H
(D350-636-101 TOE STEP)
1 PL PER SKIDTUBE

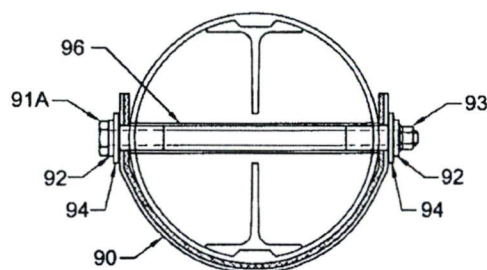


SECTION N-N
(LH SHOWN, RH OPPOSITE)
(D350-636-011/-012 WITH APICAL CYLINDRICAL FLOATS ONLY)

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.



SECTION R-R
SHOWN WITH DRILLED Ø0.633" HOLE &
D350-636-109 TOW RING KIT

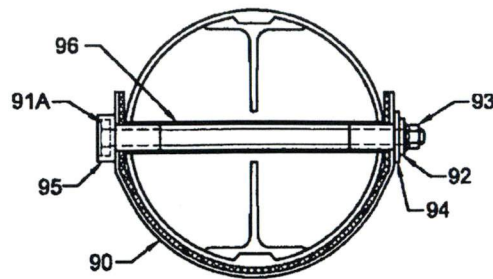


SECTION S-S
D350-636-015/-016/-017/-018/-215/-216/-217/-218
SKIDTUBES, 3 PL

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

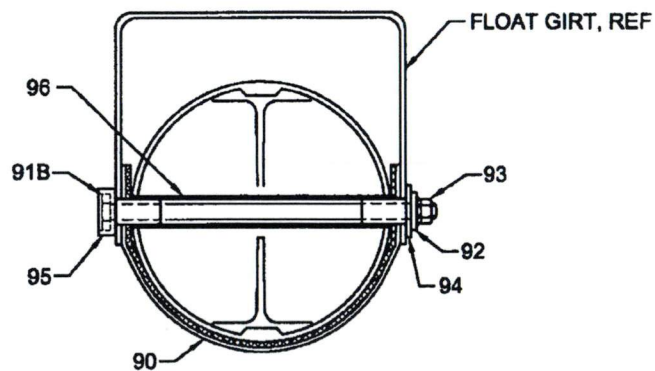
Revision: 3

32-00-00



**WITHOUT APICAL CYLINDRICAL BAG
FLOATS**

OR



WITH APICAL CYLINDRICAL BAG FLOATS

SECTION T-T

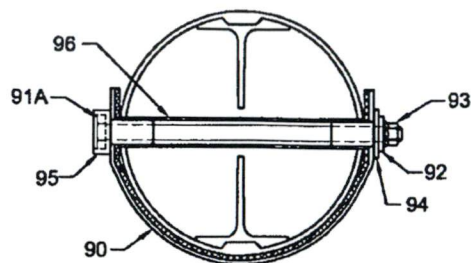
D350-636-015/-016/-215/-216 SKIDTUBES

1 PL

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

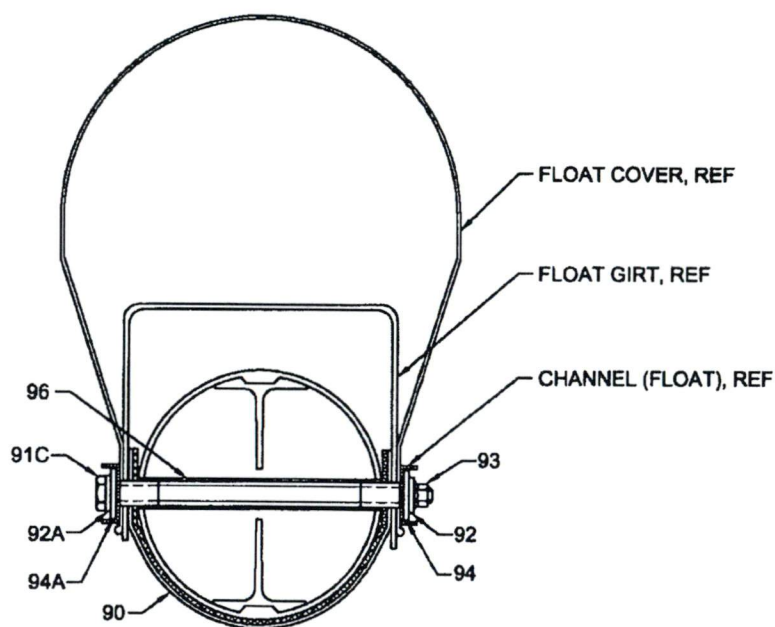
Revision: 3

32-00-00



WITHOUT APICAL TRI BAG FLOATS

OR



WITH APICAL TRI BAG FLOATS

SECTION U-U

D350-636-017/-018/-217/-218 SKIDTUBES

1 PL

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

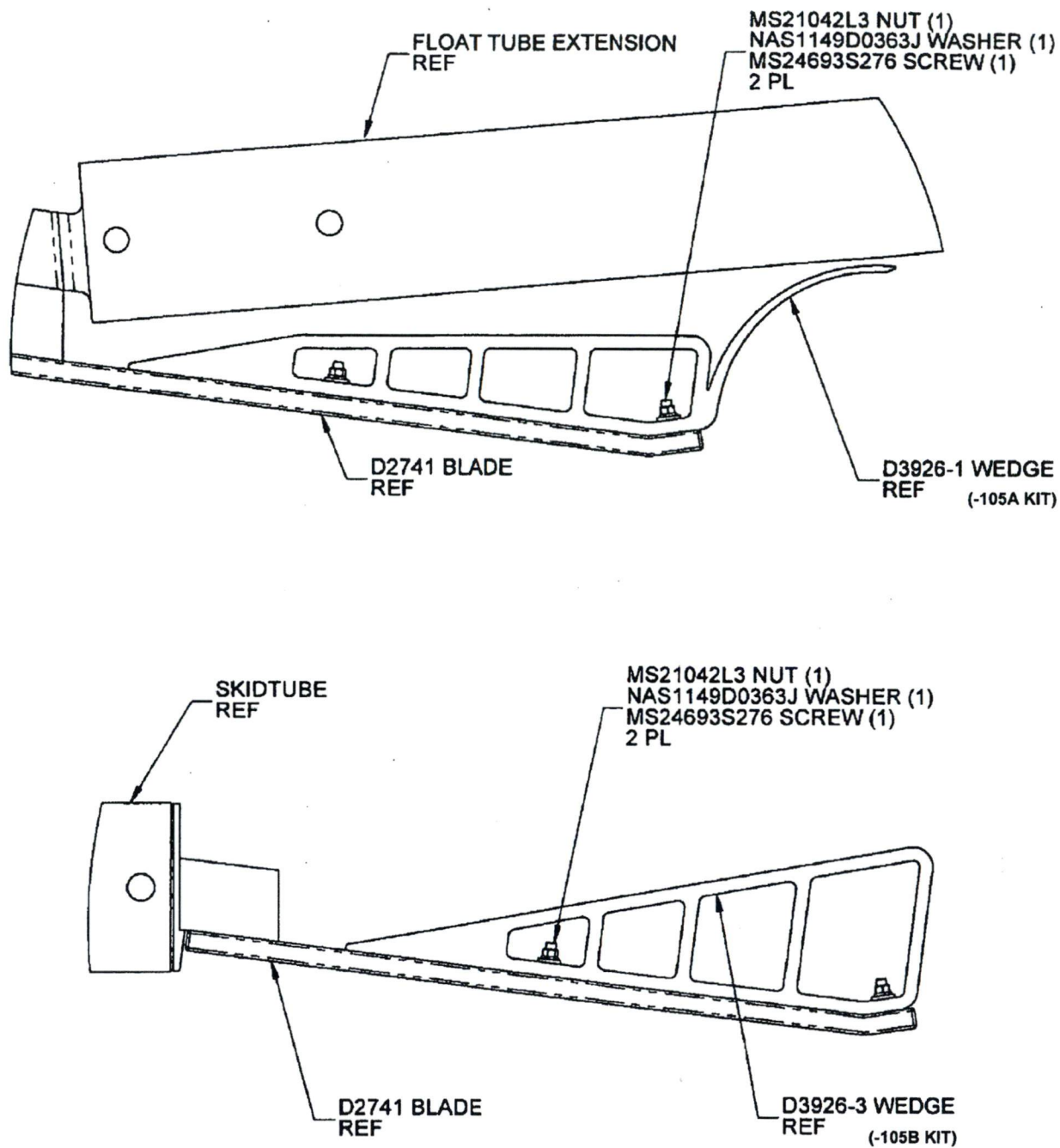


Figure 32-4: D350-636-105A/-105B WEDGE KIT

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

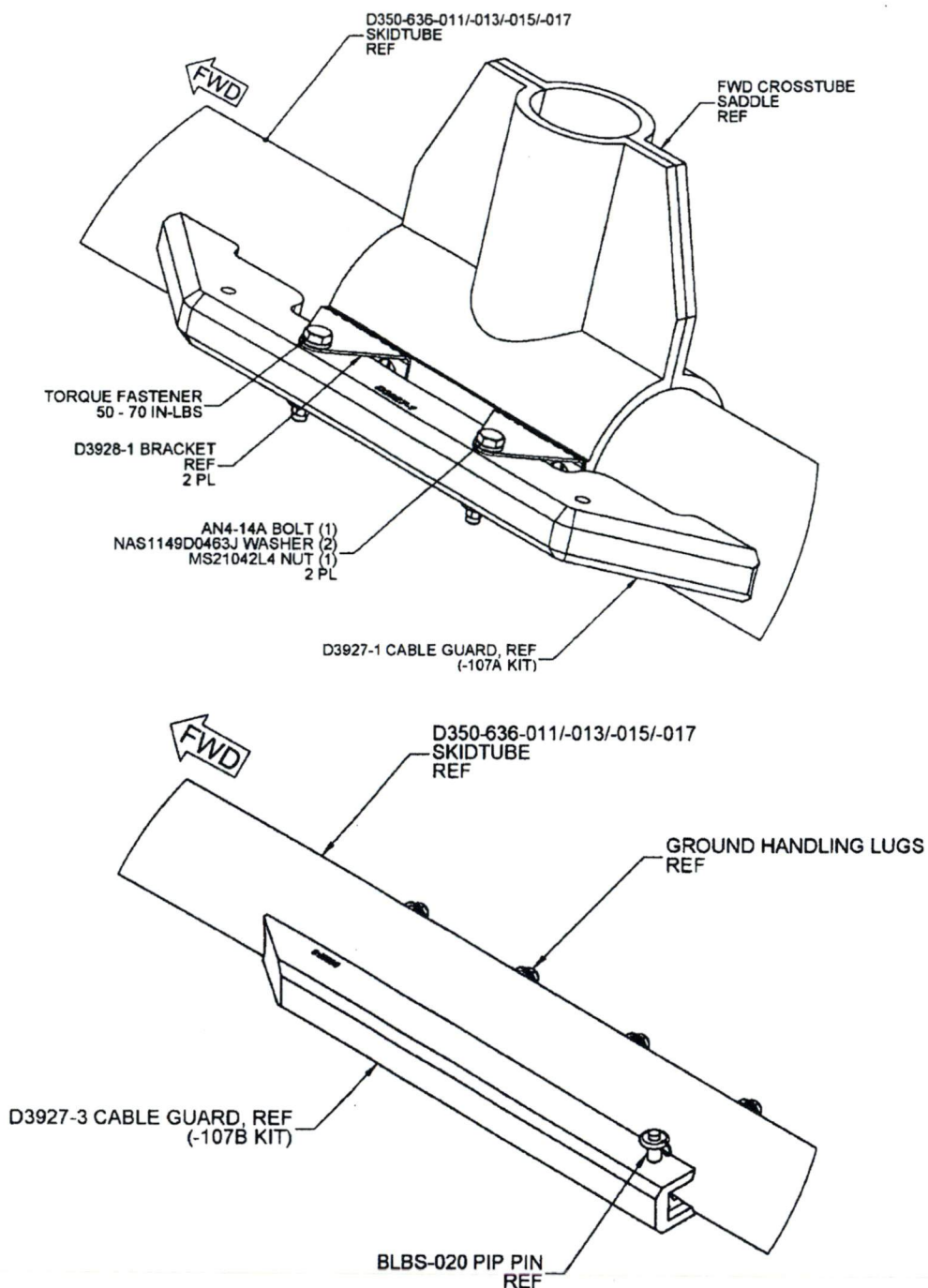


Figure 32-5: D350-636-107A/-107B CABLE GUARD KIT

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
 THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
 OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

32.9 WEIGHT AND BALANCE

The following weight and balance information is for the replacement Dart parts. The weight and balance of the skidtubes that are being removed from the aircraft is the responsibility of the installer.

Installation	Weight	LONGITUDINAL		LATERAL (STD GEAR)		LATERAL (HIGH GEAR)	
		Arm	Moment	Arm	Moment	Arm	Moment
D350-636-011 LH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	30.1 lb 13.7 kg	128.6 in 3.27 m	3871 in-lb 44.8 m-k-g	-39.3 in -1.00 m	-1183 in-lb -13.7 m-k-g	-41.3 in -1.05 m	-1243 in-lb -14.4 m-k-g
D350-636-012 RH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	30.1 lb 13.7 kg	128.6 in 3.27 m	3871 in-lb 44.8 m-k-g	+39.3 in +1.00 m	+1183 in-lb +13.7 m-k-g	+41.3 in +1.05 m	+1243 in-lb +14.4 m-k-g
D350-636-013 LH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	30.1 lb 13.7 kg	128.6 in 3.27 m	3871 in-lb 44.8 m-k-g	-39.3 in -1.00 m	-1183 in-lb -13.7 m-k-g	-41.3 in -1.05 m	-1243 in-lb -14.4 m-k-g
D350-636-014 RH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	30.1 lb 13.7 kg	128.6 in 3.27 m	3871 in-lb 44.8 m-k-g	+39.3 in +1.00 m	+1183 in-lb +13.7 m-k-g	+41.3 in +1.05 m	+1243 in-lb +14.4 m-k-g
D350-636-015 LH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	32.5 lb 14.7 kg	124.1 in 3.15 m	4033 in-lb 46.3 m-k-g	-39.3 in -1.00 m	-1277 in-lb -14.7 m-k-g	-41.3 in -1.05 m	-1342 in-lb -15.4 m-k-g
D350-636-016 RH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	32.5 lb 14.7 kg	124.1 in 3.15 m	4033 in-lb 46.3 m-k-g	+39.3 in +1.00 m	+1277 in-lb +14.7 m-k-g	+41.3 in +1.05 m	+1342 in-lb +15.4 m-k-g
D350-636-017 LH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	32.5 lb 14.7 kg	124.1 in 3.15 m	4033 in-lb 46.3 m-k-g	-39.3 in -1.00 m	-1277 in-lb -14.7 m-k-g	-41.3 in -1.05 m	-1342 in-lb -15.4 m-k-g
D350-636-018 RH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	32.5 lb 14.7 kg	124.1 in 3.15 m	4033 in-lb 46.3 m-k-g	+39.3 in +1.00 m	+1277 in-lb +14.7 m-k-g	+41.3 in +1.05 m	+1342 in-lb +15.4 m-k-g
D350-636-215 LH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	34.5 lb 15.6 kg	123.0 in 3.13 m	4244 in-lb 48.8 m-k-g	-39.3 in -1.00 m	-1356 in-lb -15.6 m-k-g	-41.3 in -1.05 m	-1425 in-lb -16.4 m-k-g
D350-636-216 RH SKIDTUBE, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE	34.5 lb 15.6 kg	123.0 in 3.13 m	4244 in-lb 48.8 m-k-g	+39.3 in +1.00 m	+1356 in-lb +15.6 m-k-g	+41.3 in +1.05 m	+1425 in-lb +16.4 m-k-g
D350-636-217 LH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	34.5 lb 15.6 kg	123.0 in 3.13 m	4244 in-lb 48.8 m-k-g	-39.3 in -1.00 m	-1356 in-lb -15.6 m-k-g	-41.3 in -1.05 m	-1425 in-lb -16.4 m-k-g
D350-636-218 RH SKIDTUBE AIRCRAISER/APICAL TRI-BAG FLOAT COMPATIBLE	34.5 lb 15.6 kg	123.0 in 3.13 m	4244 in-lb 48.8 m-k-g	+39.3 in +1.00 m	+1356 in-lb +15.6 m-k-g	+41.3 in +1.05 m	+1425 in-lb +16.4 m-k-g
*D350-636-045 WEARSHOE MODIFICATION KIT	0.5 lb 0.2 kg	125.5 in 3.19 m	69 in-lb 0.80 m-k-g	± 39.3 in ± 1.00 m	± 22 in-lb ± 0.25 m-k-g	± 41.3 in ± 1.05 m	± 23 in-lb ± 0.26 m-k-g
**D350-636-047 RUN-ON WEARPLATE KIT	3.3 lb 1.5 kg	119.4 in 3.03 m	394 in-lb 4.5 m-k-g	± 39.3 in ± 1.00 m	± 130 in-lb ± 1.5 m-k-g	± 41.3 in ± 1.05 m	± 136 in-lb ± 1.6 m-k-g

(CONTINUED ON NEXT PAGE)

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

(CONTINUED FROM PREVIOUS PAGE)

Installation	Weight	LONGITUDINAL		LATERAL (STD GEAR)		LATERAL (HIGH GEAR)	
		Arm	Moment	Arm	Moment	Arm	Moment
D350-636-101 TOE STEP KIT	1.0 lb 0.5 kg	60.7 in 1.54 m	61 in-lb 0.8 m-k-g	± 39.3 in ± 1.00 m	± 39.3 in-lb ± 0.5 m-k-g	± 41.3 in ± 1.05 m	± 41.3 in-lb ± 0.53 m-k-g
D350-636-105A/B WEDGE KIT	0.5 lb 0.2 kg	178.3 in 4.53 m	89 in-lb 1.0 m-k-g	0.0 in 0.00 m	0.0 in-lb 0.0 m-k-g	0.0 in 0.0 m	0.0 in-lb 0.0 m-k-g
D350-636-107 CABLE GUARD KIT	1.5 lb 0.7 kg	113.0 in 2.87 m	170 in-lb 2.0 m-k-g	± 39.8 in ± 1.01 m	± 60 in-lb ± 0.7 m-k-g	± 42.8 in ± 1.09 m	± 64 in-lb ± 0.8 m-k-g
D350-636-107A FWD CABLE GUARD	0.7 lb 0.3 kg	106.3 in 2.70 m	74 in-lb 0.8 m-k-g	± 40.9 in ± 1.04 m	± 29 in-lb ± 0.3 m-k-g	± 42.9 in ± 1.09 m	± 30 in-lb ± 0.3 m-k-g
D350-636-107B AFT CABLE GUARD	0.8 lb 0.4 kg	137.5 in 3.49 m	117 in-lb 1.4 m-k-g	± 40.2 in ± 1.02 m	± 34 in-lb ± 0.4 m-k-g	± 42.2 in ± 1.07 m	± 36 in-lb ± 0.4 m-k-g
D350-636-109 TOW RING KIT	0.6 lb 0.3 kg	64.7 in 1.64 m	39 in-lb 0.5 m-k-g	± 37.7 in ± 0.96 m	± 23 in-lb ± 0.3 m-k-g	± 39.7 in ± 1.01 m	± 24 in-lb ± 0.3 m-k-g

* Weight added to relevant skidtube installation when D350-636-045 Wearshoe Modification Kit is installed as replacement wearshoes on D350-636-011/-012/-013/-014 Skidtube Installations at CHG 002 or earlier.

There is a negligible weight change when the D350-636-045 Wearshoe Modification Kit is installed as replacement wearshoes on D350-636-011/-012/-013/-014 Skidtube Installations at CHG 003.

** Weight added to relevant skidtube installation when D350-636-047 Wearshoe Modification Kit is installed as replacement wearshoes on D350-636-011/-012/-013/-014 Skidtube.

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

32.10 PART LIST

32.10.1 D350-636-011/-012/-013/-014 SKIDTUBES AT CHANGE 003

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -043	Part Number	Description
	X					D350-636-011	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
		X				D350-636-012	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
			X			D350-636-013	SKIDTUBE INSTALLATION, LH AIRCRAUSER/ APICAL TRI-BAG FLOAT COMPATIBLE
				X		D350-636-014	SKIDTUBE INSTALLATION, RH AIRCRAUSER/ APICAL TRI-BAG FLOAT COMPATIBLE
					X	D350-636-043	WEARSHOE KIT (REPLACES -041 KIT)
1	1					D2750-041	SKIDTUBE ASSEMBLY, LH
1		1				D2750-042	SKIDTUBE ASSEMBLY, RH
1			1			D2750-043	SKIDTUBE ASSEMBLY, LH
1				1		D2750-044	SKIDTUBE ASSEMBLY, RH
*1	1					D2750-1	SKIDTUBE WELDMENT, LH
*1		1				D2750-2	SKIDTUBE WELDMENT, RH
*1			1			D2750-3	SKIDTUBE WELDMENT, LH
*1				1		D2750-4	SKIDTUBE WELDMENT, RH
**2	8	8	8	8		350A41-1027-20	SCREW
**3	8	8	8	8		23119AG120LE	WASHER
**4	8	8	8	8		22541N120	NUT
*5	1	1	1	1		AN8C35A	BOLT (REPLACES AN8-35A)
*6A	2	2	2	2		AN960C816L	WASHER (REPLACES AN960JD816)
*6B	2	2	2	2		NAS1515H8L	WASHER
*7	1	1	1	1		MS21083C8	NUT (REPLACES MS21083N8)
*8	1		1			D3488-041	BLADE FITTING, LH (REPLACES D2742-1)
*8		1		1		D3488-042	BLADE FITTING, RH (REPLACES D2742-2)
9	1	1	1	1		D2741	BLADE
10	2	2	2	2		AN8C21A	BOLT (REPLACES AN8-16A)
11A	2	2	2	2		AN960C816L	WASHER (REPLACES AN960JD816)
11B	2	2	2	2		D3672-13	WASHER
12	2	2	2	2		MS21083C8	NUT (REPLACES MS21083N8)
*13	4	4	4	4		ALS4-1032-225	INSERT
*14	4	4	4	4		AN6C44A	BOLT (REPLACES AN6-44A)
*15	8	8	8	8		D2745	BUSHING
*16	4	4	4	4		MS21043-6	NUT (REPLACES MS21042L6)
*17	8	8	8	8		D3631-1	WASHER (REPLACES NAS1515H8L)
*18	4	4	4	4		ALS4-1032-225	INSERT (REPLACES NAS1330S3KB166)
*19	4	4	4	4		AN3C6A	BOLT (REPLACES AN3-6A)

(CONTINUED ON NEXT PAGE)

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

(CONTINUED FROM PREVIOUS PAGE)

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -043	Part Number	Description
*20A	4	4	4	4		AN960C10L	WASHER (REPLACES AN960JD10)
*20B	4	4	4	4		NAS1515H3L	WASHER (REPLACES AN960JD10)
*22	5	5	5	5	5	D3537-1	WEARPAD (REPLACES D2648-3)
*23A	1	1	1	1	1	D3535-13	WEARSHOE (REPLACES D2656-13)
*23B	1	1	1	1	1	D3536-13	GASKET
*24A	1	1	1	1	1	D3535-25	WEARSHOE (REPLACES D2746)
*24B	1	1	1	1	1	D3536-25	GASKET
*25A	1	1	1	1	1	D3535-35	WEARSHOE (REPLACES D2656-35)
*25B	1	1	1	1	1	D3536-35	GASKET
*26A	38	38	38	38	38	AN3C5A	BOLT (REPLACES AN3-5A)
*26B	4	4	4	4	4	AN3C7A	BOLT (REPLACES AN3-7A)
*27	42	42	42	42	42	AN960C10L	WASHER (REPLACES AN960JD10)
*28	38	38	38	38		ALS4-1032-225	INSERT (REPLACES NAS1330S3KB166)
*30	8	8	8	8		D3492-041	PLUG ASSEMBLY
*31	8	8				D3492-043	PLUG ASSEMBLY
*32			8	8		D3492-045	PLUG ASSEMBLY
***43	2	2	2	2		D3493-1	WASHER
50	2	2				D3532-1	SPACER

* PART OF D2750-041/-042 OR D2750-043/-044 ASSEMBLY

** TO BE SUPPLIED BY CUSTOMER

*** ONLY INSTALLED IF INSTALLING AN APICAL FLOAT SYSTEM

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

32.10.2 D350-636-011/-012/-013/-014 SKIDTUBES AT CHANGE 004 OR LATER

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -045	Part Number	Description
	X					D350-636-011	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
		X				D350-636-012	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
			X			D350-636-013	SKIDTUBE INSTALLATION, LH AIRCRAUSER/ APICAL TRI-BAG FLOAT COMPATIBLE
				X		D350-636-014	SKIDTUBE INSTALLATION, RH AIRCRAUSER/ APICAL TRI-BAG FLOAT COMPATIBLE
					X	D350-636-045	WEARSHOE KIT
1	1					D2750-041	SKIDTUBE ASSEMBLY, LH
1		1				D2750-042	SKIDTUBE ASSEMBLY, RH
1			1			D2750-043	SKIDTUBE ASSEMBLY, LH
1				1		D2750-044	SKIDTUBE ASSEMBLY, RH
*1	1					D2750-1	SKIDTUBE WELDMENT, LH
*1		1				D2750-2	SKIDTUBE WELDMENT, RH
*1			1			D2750-3	SKIDTUBE WELDMENT, LH
*1				1		D2750-4	SKIDTUBE WELDMENT, RH
**2	8	8	8	8		350A41-1027-20	SCREW
**3	8	8	8	8		23119AG120LE	WASHER
**4	8	8	8	8		22541N120	NUT
*5	1	1	1	1		AN8C35A	BOLT
*6A	1	1	1	1		AN960C816L	WASHER
*7	1	1	1	1		MS21083C8	NUT
*8	1		1			D3488-041	BLADE FITTING, LH
*8		1		1		D3488-042	BLADE FITTING, RH
9	1	1	1	1		D2741	BLADE
10	2	2	2	2		AN8C21A	BOLT
11	2	2	2	2		AN960JD816	WASHER (OR NAS1149DO863J)
12	2	2	2	2		MS21083C8	NUT
*14	4	4	4	4		AN6C44A	BOLT
*15	8	8	8	8		D2745	BUSHING
*16	4	4	4	4		MS21043-6	NUT
*17	8	8	8	8		D3631-1	WASHER
*18	4	4	4	4		ALS4-1032-225	INSERT
*19	4	4	4	4		AN3C6A	BOLT
*20A	4	4	4	4		AN960C10L	WASHER
*20B	4	4	4	4		NAS1515H3L	WASHER

(CONTINUED ON NEXT PAGE)

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

(CONTINUED FROM PREVIOUS PAGE)

Item	Qty -011	Qty -012	Qty -013	Qty -014	Qty -045	Part Number	Description
*22	3	3	3	3	3	D3537-1	WEARPAD
*22A	1	1	1	1	1	D3791-1	WEARPLATE (REPLACES D3537-1)
*23A	1	1	1	1	1	D3793-1	WEARSHOE (REPLACES D3535-13)
*23B	1	1	1	1	1	D3794-1	GASKET (REPLACES D3536-13)
*24A	1	1	1	1	1	D3535-25	WEARSHOE
*24B	1	1	1	1	1	D3536-25	GASKET
*25A	1	1	1	1	1	D3793-3	WEARSHOE (REPLACES D3535-35)
*25B	1	1	1	1	1	D3794-3	GASKET (REPLACES D3536-35)
*26A	34	34	34	34	34	AN3C5A	BOLT
*27	34	34	34	34	34	AN960C10L	WASHER
*28	34	34	34	34		ALS4-1032-225	INSERT
*30	8	8	8	8		D3492-041	PLUG ASSEMBLY
*31	8	8				D3492-043	PLUG ASSEMBLY
*32			8	8		D3492-045	PLUG ASSEMBLY
***43	2	2	2	2		D3493-1	WASHER
50	2	2				D3532-1	SPACER

* PART OF D2750-041/-042 OR D2750-043/-044 ASSEMBLY

** TO BE SUPPLIED BY CUSTOMER

*** ONLY INSTALLED IF INSTALLING AN APICAL FLOAT SYSTEM

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

32.10.3 D350-636-101/-103/-104/-105A/-105B/-107/-107A/-107B/-109 KITS

Item	Qty -101	Qty -103	Qty -104	Qty -105A	Qty -105B	Qty -107	Qty -107A	Qty -107B	Qty -109	Part Number	Description
	X									D350-636-101	TOE STEP KIT (LH/RH)
		X								D350-636-103	APICAL FLOAT CONVERSION KIT, LH
			X							D350-636-104	APICAL FLOAT CONVERSION KIT, RH
				X						D350-636-105A	WEDGE KIT
					X					D350-636-105B	WEDGE KIT
						X				D350-636-107	CABLE GUARD KIT
						1	X			D350-636-107A	FWD CABLE GUARD
						1		X		D350-636-107B	AFT CABLE GUARD
									X	D350-636-109	TOW RING KIT
8		1								D3488-041	BLADE FITTING, LH (REPLACES D2742-1)
8			1							D3488-042	BLADE FITTING, RH (REPLACES D2742-2)
10		2	2							AN8C21A	BOLT (REPLACES AN8-16A)
11		2	2							AN960JD816	WASHER (OR NAS1149D0863J)
12		2	2							MS21083C8	NUT (REPLACES MS21083N8)
26B		4	4							AN3C7A	BOLT (REPLACES AN3-7A)
27		4	4							AN960C10L	WASHER (REPLACES AN960JD10)
40	1									D3487-1	TOE STEP ASSEMBLY
43		2	2							D3493-1	WASHER
50		2	2							D3532-1	WASHER
60				2						D3926-1	WEDGE
61					2					D3926-3	WEDGE
62				4	4					MS21042L3	NUT
63				4	4					MS24693S276	SCREW
64				4	4					NAS1149D0363J	WASHER
70							1			D3927-1	FWD CABLE GUARD
71								1		D3927-3	AFT CABLE GUARD
72							2			D3928-1	BRACKET
73							2			AN4-14A	BOLT
74								1		BLBS-020	PIP PIN
75							2			MS21042L4	NUT
76							4			NAS1149D0463J	WASHER
80									1	D3407-043	TOW RING ASSEMBLY
81									2	D3417-9	WASHER
82									2	D3456-1	WASHER
83									1	MS21043-4	NUT

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •
 THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED
 OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

32.10.4 D350-636-015/-016/-017/-018/-047 KITS

Item	Qty -015	Qty -016	Qty -017	Qty -018	Qty -047	Part Number	Description
	X					D350-636-015	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE W/ TRAINING WEARPLATE
		X				D350-636-016	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE W/ TRAINING WEARPLATE
			X			D350-636-017	SKIDTUBE INSTALLATION, LH AIRCRAUSER/ APICAL TRI-BAG FLOAT COMPATIBLE W/ TRAINING WEARPLATE
				X		D350-636-018	SKIDTUBE INSTALLATION, RH AIRCRAUSER/ APICAL TRI-BAG FLOAT COMPATIBLE W/ TRAINING WEARPLATE
					X	D350-636-047	TRAINING WEARPLATE KIT (LH/RH)
1	1					D4168-041	SKIDTUBE ASSEMBLY, LH
1		1				D4168-042	SKIDTUBE ASSEMBLY, RH
1			1			D4168-043	SKIDTUBE ASSEMBLY, LH
1				1		D4168-044	SKIDTUBE ASSEMBLY, RH
*1	1					D4168-1	SKIDTUBE WELDMENT, LH
*1		1				D4168-2	SKIDTUBE WELDMENT, RH
*1			1			D4168-3	SKIDTUBE WELDMENT, LH
*1				1		D4168-4	SKIDTUBE WELDMENT, RH
**2	8	8	8	8		350A41-1027-20	SCREW
**3	8	8	8	8		23119AG120LE	WASHER
**4	8	8	8	8		22541N120	NUT
*5	1	1	1	1		AN8C35A	BOLT
*6A	1	1	1	1		AN960C816L	WASHER (OR NAS1149CO832R)
*7	1	1	1	1		MS21083C8	NUT
*8	1		1			D3488-041	BLADE FITTING, LH
*8		1		1		D3488-042	BLADE FITTING, RH
9	1	1	1	1		D2741	BLADE
10	2	2	2	2		AN8C21A	BOLT
11	2	2	2	2		AN960JD816	WASHER (OR NAS1149DO863J)
12	2	2	2	2		MS21083C8	NUT
*14	4	4	4	4		AN6C44A	BOLT
*15	8	8	8	8		D2745	BUSHING
*16	4	4	4	4		MS21043-6	NUT
*17	8	8	8	8		D3631-1	WASHER
*18	4	4	4	4		ALS4-1032-225	INSERT
*19	4	4	4	4		AN3C6A	BOLT
*20A	4	4	4	4		AN960C10L	WASHER (OR NAS1149CO332R)
*20B	4	4	4	4		NAS1515H3L	WASHER
*30	8	8	8	8		D3492-041	PLUG ASSEMBLY
*31	8	8				D3492-043	PLUG ASSEMBLY
*32			8	8		D3492-045	PLUG ASSEMBLY

(CONTINUED ON NEXT PAGE)

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

(CONTINUED FROM PREVIOUS PAGE)

Item	Qty -015	Qty -016	Qty -017	Qty -018	Qty -047	Part Number	Description
***43	2	2	2	2		D3493-1	WASHER
*90	1	1	1	1	1	D4154-041	WEARPLATE ASSEMBLY
*91A	4	4	4	4	4	AN3C36A	BOLT ¹
91B	1	1	1	1	1	AN3C37A	BOLT ²
91C	1	1	1	1	1	AN3C42A	BOLT ³
*92	7	7	7	7	8	AN960C10	WASHER (OR NAS1149CO363R)
92A			1	1		AN960C10	WASHER (OR NAS1149CO363R) ³
*93	4	4	4	4	4	MS21043-3	NUT
*94	7	7	7	7	8	D3873-1	BUSHING
94A			1	1		D3873-1	BUSHING ³
*95	1	1	1	1	1	D4171-1	BUSHING ⁴
96					4	D4170-3	SPACER
*97	1	1	1	1	1	AN3C34A	BOLT
*98	2	2	2	2	2	AN960C10	WASHER (OR NAS1149CO363R)
*99	1	1	1	1	1	MS21043-3	NUT

* PART OF D4168-041/-042/-043/-044

** TO BE SUPPLIED BY CUSTOMER

*** ONLY INSTALLED IF INSTALLING AN APICAL FLOAT SYSTEM

¹ QTY USED MAY BE LESS ON SKIDTUBES WITH APICAL CYLINDRICAL OR TRI-BAG FLOATS² HARDWARE USED ON THE SKIDTUBES INSTALLED WITH APICAL CYLINDRICAL BAG FLOATS³ HARDWARE USED ON THE SKIDTUBES INSTALLED WITH APICAL TRI-BAG FLOATS⁴ HARDWARE NOT USED ON THE SKIDTUBES INSTALLED WITH APICAL TRI-BAG FLOATS

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

32.10.5 D350-636-215/-216/-217/-218 KITS

Item	Qty -215	Qty -216	Qty -217	Qty -218	Part Number	Description
	X				D350-636-215	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE DELUXE
		X			D350-636-216	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE DELUXE
			X		D350-636-217	SKIDTUBE INSTALLATION, LH AIRCruiser/ APICAL TRI-BAG FLOAT COMPATIBLE DELUXE
				X	D350-636-218	SKIDTUBE INSTALLATION, RH AIRCruiser/ APICAL TRI-BAG FLOAT COMPATIBLE DELUXE
	1				D350-636-015	SKIDTUBE INSTALLATION, LH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
		1			D350-636-016	SKIDTUBE INSTALLATION, RH, STD AERAZUR/APICAL CYLINDRICAL FLOAT COMPATIBLE
			1		D350-636-017	SKIDTUBE INSTALLATION, LH AIRCruiser/ APICAL TRI-BAG FLOAT COMPATIBLE
				1	D350-636-018	SKIDTUBE INSTALLATION, RH AIRCruiser/ APICAL TRI-BAG FLOAT COMPATIBLE
	1	1	1	1	D350-636-101	TOE STEP KIT (LH/RH)
	1	1	1	1	D350-636-105A	WEDGE KIT
	1	1	1	1	D350-636-109	TOW RING KIT

• COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.

Revision: 3

32-00-00

Nathalie Barbeau

? Van Hoorne

From: Simon Ebacher <SEbacher@canadianhelicopters.com>
Sent: 14 January 2016 08:47
To: Nathalie Barbeau
Cc: Claude Boule
Subject: BearPaw dimensions
Attachments: BearPaw dimensions.pdf

1

Bon matin Nathalie,

Tel que discuté, voici les dimensions pour pouvoir intégrer le HTC-EO-0709-003 à votre production de BearPaws.

Questions:

- Pensez-vous faire ce EO sur tous les BearPaw que vous avez en inventaire? Serait-il fait sur ceux que l'on commanderait prochainement?

- Qu'arrivera-t-il avec le part number? Changera-t-il ? Nous ne le souhaitons pas! Si vous avez l'intension de le changer, appelez moi pour que l'on en discute.

Si vous avez des questions au sujets de ces dimensions ou tout autres interrogations, n'hésitez pas à me rejoindre.

J'ai bien reçu votre échantillons de votre nouveau tissu. Pouvez vous, lors de l'envoi des photos, nous mentionner si le prix reste le même que l'ancien tissu ou s'il y a modification du prix?

Bonne journée,

cette annu :
2 en stock
max 1-2.

Simon Ebacher
Lead Hand Aircraft Maintenance Engineer

Canadian Helicopters Limited

Office 450-452-3000
Direct 450-452-3092
canadianhelicopters.com



Nathalie Barbeau

From: Simon Ebacher <SEbacher@canadianhelicopters.com>
Sent: 14 January 2016 08:47
To: Nathalie Barbeau
Cc: Claude Boule
Subject: BearPaw dimensions
Attachments: BearPaw dimensions.pdf

1

Bon matin Nathalie,

Tel que discuté, voici les dimensions pour pouvoir intégrer le HTC-EO-0709-003 à votre production de BearPaws.

Questions:

- Pensez-vous faire ce EO sur tous les BearPaw que vous avez en inventaire? Serait-il fait sur ceux que l'on commanderait prochainement?

- Qu'arrivera-t-il avec le part number? Changera-t-il ? Nous ne le souhaitons pas! Si vous avez l'intension de le changer, appelez moi pour que l'on en discute.

Si vous avez des questions au sujets de ces dimensions ou tout autres interrogations, n'hésitez pas à me rejoindre.

J'ai bien reçu votre échantillons de votre nouveau tissu. Pouvez vous, lors de l'envoi des photos, nous mentionner si le prix reste le même que l'ancien tissu ou s'il y a modification du prix? #

Bonne journée,

• Quel modèle DAD? Tous les parents?

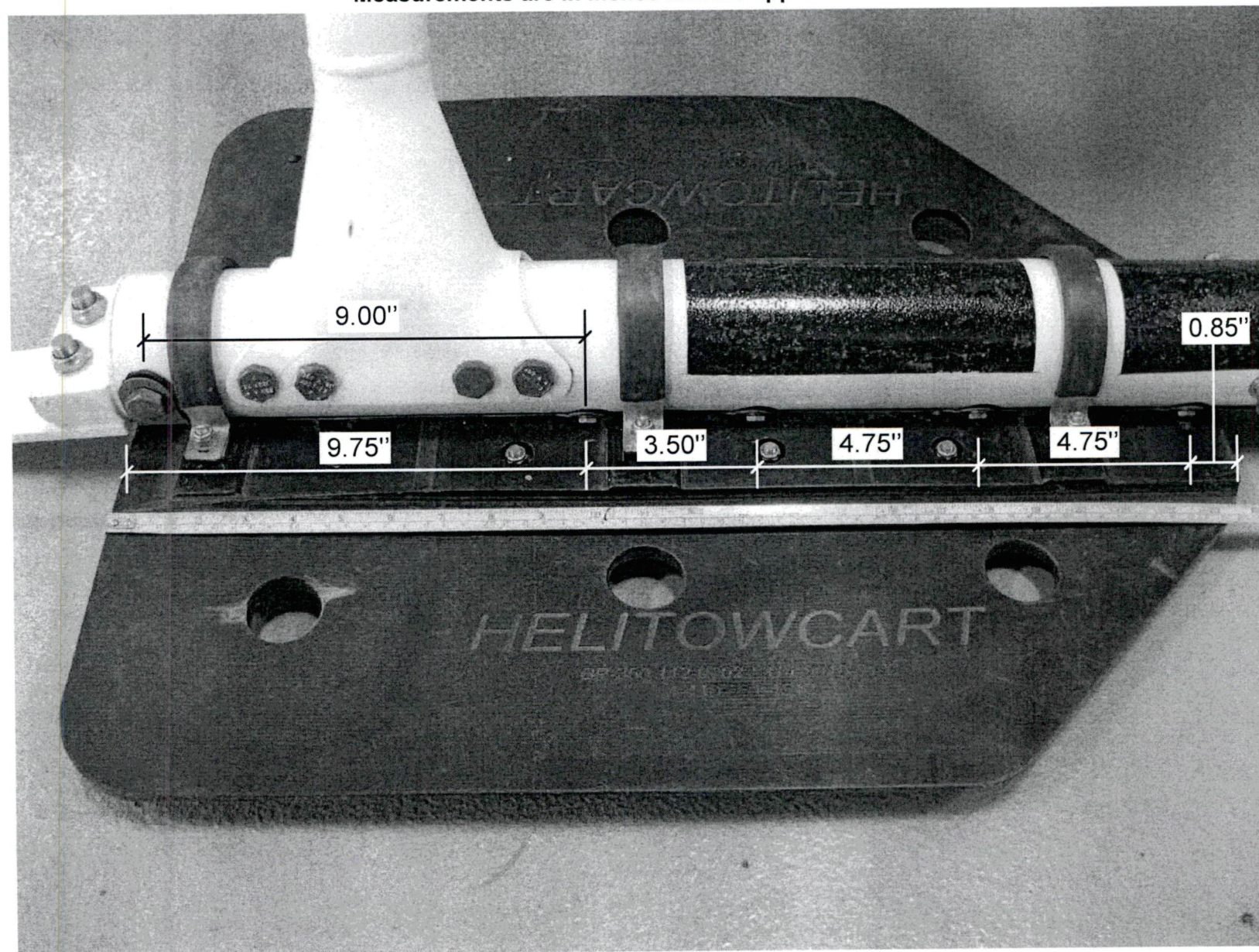
Simon Ebacher
Lead Hand Aircraft Maintenance Engineer

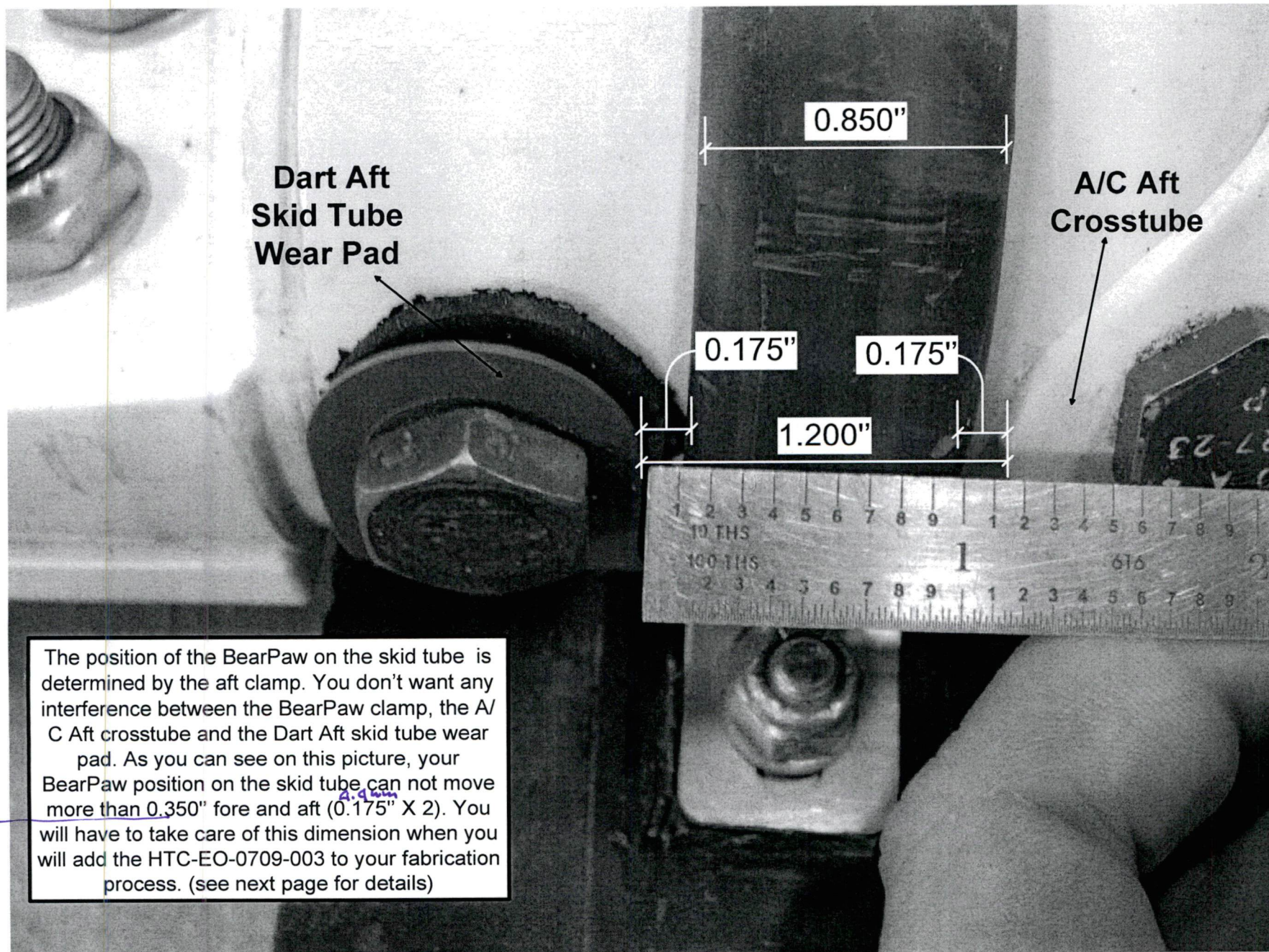
Canadian Helicopters Limited
Office 450-452-3000
Direct 450-452-3092
canadianhelicopters.com

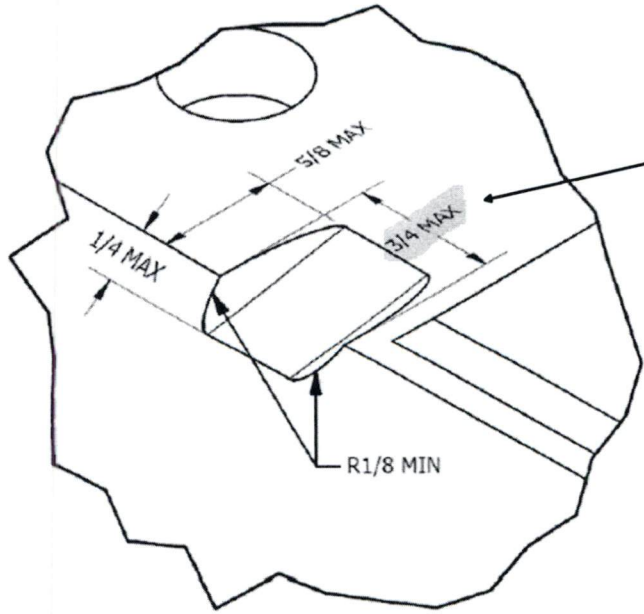


Dart Skid Tube wear pad bolt dimensions

*** Dimensions are taken from BearPaw fwd and aft edges ***
Measurements are in inches and are approximate.





3.0	BearPaw Repair	
3.1	Remove all components from BearPaw pads.	
3.2	<p>Repair BearPaw pads based on the following dimensions.</p>  <p>NOTE Only repair BearPaws at locations where damage occurred, or where damage could eventually occur. Reduce above dimensions as required, except radius.</p>	<p><i>Dremel</i> End mill</p>

* You may have to increase the repair scheme width ($\frac{3}{4}$ " max on the picture beside) to allow the 0.350" BearPaw fore and aft movement mentioned on the previous page. We suggest 1" instead of $\frac{3}{4}$ ".

Protect your helicopter with BearPaws



BearPaws

For **R44, R66,
AS350, AS355, EC130**

BP44, BP350, BP130

**Perform Safe landings on *Snow*, on *Clear Ice*,
as well as on *Spongy Soils* & in *Rivers***

**Helitowcart BearPaws offer
Great Quality at an *Affordable Price***

Efficient Design

- 1) Pad shape streamlined to allow dust & gravel to easily flow off
- 2) Pad with flow holes to allow water release when taking off from rivers
- 3) Pad shape reinforced at rear for long term durability of landing contact point

Sturdy Construction

- 1) Sturdy Attachment Clips made of 14ga Stainless Steel
- 2) Pads made of Long Lasting UHMW-Polymer for best sturdiness-flexibility ratio
- 3) Pads profile optimized through finite element analysis to obtain best lightweight-strength ratio



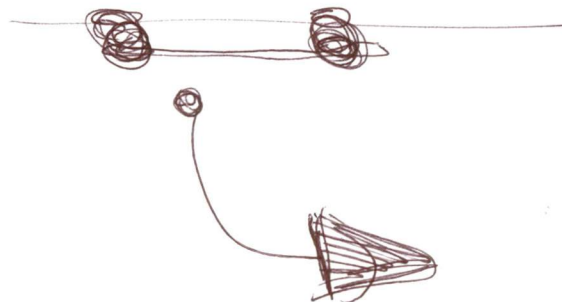
Iceblades: Helitowcart introduced iceblades for bearpaws to provide better traction on clear ice. This reduces risks of helicopter skidding on ice. Iceblades also offer extra protection to pads especially for helicopters used for training. Iceblades are included with the BearPaw kit.

Models:	BP44	BP350	BP130
For	R44, R66	AS350, AS355	EC130
STCs	 <p>New! <u>Canadian STC for R66</u> (US STC Pending for R66)</p> <p>Canada : Q-SH-06-24 United States: SR02432NY Australia & New Zealand: Use US STC</p>	 <p>Canada : Q-SH-06-24 United States: SR02432NY Australia & New Zealand: Use US STC</p>	 <p>Canada : Q-SH-06-24 United States: SR02432NY Australia & New Zealand: Use US STC</p>
P/N Name: Weight	<p>112 0001 00 BP44 Bearpaws 10 lbs / 4.54 kg</p>	<p>112 0002 00 BP350 Bearpaws 18.3 lbs / 8.5kg</p>	<p>112 0005 00 BP130 Bearpaws 20 lbs / 9.1kg</p>

Simon Ebacher
Direct: 450-452-3092
~~500-700-7000~~

Dart

- à quel endroit modifier
le matériel



Simon
Ebacher
Director

-
- Prob. Batch
jein jein d'avance
sur les pads/